Evaluating the Efficacy of Diabetes Patient Education Methods in Relation to Blood Glucose Control

Mary Margaret Abernathy, Hannah Arnold, Caroline Blair, Riley Cullen, Tori Helsper, and Claudette Conway Lewis

Auburn University
**PICO Question and Significance**

The total number of people with diabetes is predicted to double in the next two decades to 366 million in 2030 due to population, growth, aging, urbanization, increasing prevalence of obesity and physical inactivity (Rygg, Rise, Gronning, Steinsbekk, 2011). Studies suggest that Diabetes Self-Management Education (DSME) is vital for patients to attain the “knowledge and skills needed to modify behavior and self-manage the disease” (Sperl-Hillen et al., 2011). This goal gives rise to the question of whether group interactive education (I) is more effective than individual education (C) in the maintenance of glycemic control (O) in diabetic patients (P).

This evidence based practice question, otherwise known as PICO question, is essential for the nursing care of diabetic patients because patient education is one of the most necessary interventions in establishing adequate blood glucose control. Targeting the diabetic population, knowledge deficit remains a fundamental issue hindering the management of glycemic control. Research confirms that most diabetics don’t monitor their blood glucose levels or even understand the importance of glycemic control (Naik, Teal, Rodriguez, & Haidet, 2011). For this reason, identifying the most effective education method is critical in providing optimal diabetes care and achieving glucose management.

Diabetes is the most common endocrine disorder and the seventh leading cause of death in the United States. Additionally, it contributes to long term, life-threatening complications such as peripheral neuropathy and cardiovascular diseases; therefore, the maintenance of diabetes is key in preventing potential comorbidities associated with the disease (Welch, Zagarins, Feinberg, & Garb, 2011). Gucciardi, DeMelo, Lee, and Grace (2007) suggest that “to reduce or prolong the development of diabetes complications, researchers, health care providers, and policy makers [should seek out] effective methods of education and management of diabetes.”
The complexity, progression and chronic nature of diabetes as a disease often augments patient feelings of anxiety related to the overwhelming amounts of information and feelings of incompetence related to self care. Consequently, education is an even more important mainstay in diabetic compliance, treatment and successful daily functioning.

Reviewing the Evidence

When gathering research regarding diabetes education methods and strategies, we searched the following online databases: CINAHL, MEDLINE, PsychINFO, Cochrane and Health Source: Nursing/Academic Edition. The key words we employed in our search included “diabetes education,” “education methods,” “teaching strategies,” “glucose monitoring,” “glucose control,” “group education,” and “individual education.” Many of the articles that arose from the search were not applicable either because they did not discuss diabetes in relation to glycemic control or did not discuss education techniques. We further narrowed the search by selecting randomized controlled trial, evidence based practice, and systematic reviews. Only articles with a publication date between 2002-2012 were considered when analyzing and critiquing the research. To review clinical practice guidelines, we searched www.AHRQ.gov for suggestions regarding diabetes education techniques and best practice; however, minimal evidence was readily available concerning our specific topic.
## Evidence Analysis Grid (EBP Project)

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| Garry Welch, Sofija E. Zagarins, Rebecca G. Feinberg, Jane L. Garb | To determine whether glycemic control is improved when motivational interviewing (MI), a patient-centered behavior change strategy, is used with diabetes self-management education (DSME) as compared to DSME alone. | - RCT  
- Sample population (n=234) was aged 30-70 years and had poorly controlled blood glucose.  
- Interventions were DSME versus DSME with motivational interviewing  
- Instruments included random blood samples to measure HbA1c, a pictorial menu of four behavioral options (i.e. self management of blood glucose, diet, exercise and medication adherence), and a “readiness ruler” to assess importance and confidence related to behavior change and a decision matrix to explore the pros and cons of behavior change.  
- Mediators of HbA1c change were measured by self-report on validated questionnaires. | Mediators for HbA1c change for the total group were diabetes self-care behaviors and diabetes distress; no between group differences were found. DSME improved blood glucose control. However, MI + DSME was less effective than DSME alone. The MI intervention itself was not found to be associated with improvement in blood glucose control when compared to the non-MI condition. Mean HbA1c change for the non-MI condition was significantly greater than that found for the MI condition. | Weak support was found for the clinical utility of MI in the management of T2DM delivered by diabetes educators. The drop out rate was high. The level of MI skills and consistency of MI delivery over time were potential confounding factors in these studies. Strengths of the study included the highly experienced MI trainers. |
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| Kavita Radhakrishnan Systematic Review (Level I) | The aim of this review is to evaluate the evidence on the effectiveness of tailored interventions to improve the self-management behaviors in individuals with heart disease, hypertension or type 2 diabetes. | - Systematic review of RCTs  
- The population included adults suffering from long-term conditions of diabetes mellitus, heart disease or hypertension.  
- Tailored interventions were compared against the usual care or alternative forms of interventions promoting self-management  
- Instruments include the CONSORT checklist  
- Outcomes include improvement in any self-management behavior of participants | Tailored interventions were marginally successful in improving self-management behaviors of individuals with long-term conditions. There did not seem to be an association between duration or dose of tailored interventions and intended outcomes in the studies included in this review. Evidence remains inconclusive about the effectiveness of tailored interventions in improving self-management behaviors in individuals with long-term conditions. | Problems with fidelity and delivering tailored interventions due to staff attrition or incorrect classification of participants to a particular stage were observed in some studies. Variability of different intervention staff could have reduced the researcher’s ability to detect intervention effects. The strength of this article is due to the review of 10 different articles. |
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| Enza Gucciardi, Margaret DeMelo, Ruth N. Lee and Sherry L. Grace | To examine the impact of two culturally competent diabetes education methods, individual counseling and individual counseling in conjunction with group education, on nutritional adherence and glycemic control in Portuguese Canadian adults with type 2 diabetes over a three-month period. | • RCT  
• Eligible Portuguese-speaking adults with type 2 diabetes (n=61) were randomly assigned to receive diabetes education counseling only (control group, n=36) or counseling in conjunction with group education (intervention group, n=25).  
• A per-protocol analysis was used to examine the efficacy of the two educational approaches on nutrition adherence and glycemic control; paired t-tests to compare results within groups and analysis of covariance (ACOVA) to compare outcomes between groups adjusting for baseline measures.  
• Outcomes measured were Theory of Planned Behavior scales (TPB), adherence to nutrition management, glycemic control and statistical analysis. | Those receiving individual counseling with group education showed greater improvement in all measures with the exception of glycemic control, where no significant difference was found between the two groups at three months. | The study recommends that the study be repeated with a longer follow up time and a larger sample. Longitudinal research is needed to observe if this reduction in glycemic control is maintained over time. The population is also limited to Portuguese Canadians, which takes away from the generalization of the study. |
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| Susan L. Norris, MD, MPH; Joseph Lau, MD; S. Jay Smith, MIS, MSC; Christopher H. Schmid, PHD; Michael M. Engelau, MD, MSC | To evaluate the efficacy of self-management education on GHb in adults with type 2 diabetes | - RCTs (n=31)  
- The intervention was evaluating the efficacy of self-management education on GHb in adults with type 2 diabetes  
- GHb concentrations were measured mostly by ion exchange methods and reported as HbA1 or HbA1c. A formula based on comparison data was used to convert HbA1 results to HbA1c equivalents.  
- The study examined the effect of baseline GHb, follow-up interval, and intervention characteristics on GHb. | Self-management education improves GHb levels at immediate follow-up, and increased contact time increases the effect. The benefit declines 1-3 months after the intervention ceases, however, suggesting that learned behaviors change over time. Long-term interventions may be required to maintain the improved glycemic control brought about by DSME programs. | Internal validity was assessed based on Cochrane methodology. The care delivered to the control group varied greatly, and improvements in GHb may be found in that group because of the Hawthorne effect, control group contamination, and unintended co-interventions. The results of this meta-analysis are likely generalizable to adult populations and geographic settings because a broad range of patient age and insulin utilization, intervention characteristics and geographic settings were examined, with no evidence that these characteristics affected outcomes. Further research is needed to better define effective interventions for reducing GHb in persons with diabetes, particularly interventions aimed at long-term maintenance of initial behavior change. |
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| JoAnn Sperl-Hillen, MD; Sarah Beaton, PhD; Omar Fernandes, MPH; Ann Voy Worley, RN, BSHS, CCRP; Gabriela Vazquez-Benitez, PhD, MSc; Emily Parker, MPH, PhD; Ann Hanson, BS; Jodi Lavin-Tompkins, RN, CNP, CDE, BC-ADM; Patricia Glasrud, MS, RD, CDE; Herbert Davis, PhD; Kenneth Adams, PhD; William Parsons, MS; C. Victor Spain, DVM, PhD | The study was conducted to determine if group education improves glucose control and psychosocial and behavioral outcomes compared with the usual care (no assigned education) and with individual education (the conventional approach) for patients with established type 2 diabetes and suboptimal control (HbA1c concentration of greater than 7 percent). | - RCT  
- A total of 623 adults from Minnesota and New Mexico with type 2 diabetes and glycosylated hemoglobin (HbA1c) concentration of 7 percent or higher were randomized to (1) group education using the US Diabetes Conversation Map program, (2) individual education, or (3) usual care (no assigned education).  
- Interventions were delivered through the ADA-recognized education programs of the participant’s care system. The individual education (IE) was the conventional approach of three individual 1-hour sessions with certified diabetes educators within approximately one-month intervals. Group education (GE) consisted of 4 two-hour sessions with groups scheduled at one-week intervals.  
- Mean HbA1c concentration was the outcome measured. | Mean HbA1c concentration decreased in all groups but significantly more in individual than group education. Individual education for patients with established suboptimally controlled diabetes resulted in better glucose control outcomes than did group education using Conversation Maps. There was also a trend toward better psychosocial and behavioral outcomes with individual education. Group based education improves diabetes control in both the short term and long term. | The lower completion rate of GE compared with IE sessions could be indicative of patient preference for IE and/or logistical difficulties associated with the GE approach (e.g. less scheduling flexibility). This study had large numbers, blinded allocation and low dropout rates. The generalizability is strengthened by several pragmatic design features of the study: inclusion/exclusion criteria, interventions were tested in real world settings, and the study has high internal validity. Long term analysis is desirable. |
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| Lisbeth O. Rygg, Marit By Rise, Kjersti Gronning, Aslak Steinsbekk | To evaluate the efficacy of ongoing group based diabetes self-management education (DSME) for patients with type 2 diabetes | • RCT  
• 146 patients, who were age 18 or older and had a doctor confirmed diagnosis of type 2 diabetes, were randomized to either group education or waiting list control. The control group was placed on a waiting list and told they would be offered the program after one year. Patients were randomized by a computer using an internet based trial service that used block randomization.  
• The two interventions were similar, locally developed DSME that were integrated into everyday practice at two hospitals.  
• The outcomes were measured at six and twelve months. Measurements were collected using self-reporting questionnaires. Blood pressure and BMI were done by clinical exam. Lab measurements were blood samples for A1C, lipid, HDL, LDL, triglycerides, Creatinine. | The locally developed ongoing DSME program prevented an increase in A1c and can have an effect on A1c in patients with higher A1c levels. The intervention group showed better diabetes knowledge and improved self-management skills after the program. | The strength of this study is that it is the first study to evaluate the effect of such a locally developed ongoing DSME as it is carried out in everyday practice. Limitations include participants having a lower A1c level than expected and the premise for the sample size calculation was thus not met. Power was 90 percent and the significance level was 0.05. Locally developed programs may be less effective than programs developed for studies. The locally developed diabetes education programs lack the help of specialized personnel who have extensive knowledge in patient education. |
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| Aanand D. Naik, Cayla R. Teal, Elisa Rodriguez, Paul Haidet | To test an active-learning, empowerment approach to teaching patients about the “diabetes ABCs” (HbA1c, systolic blood pressure, LDL cholesterol) | • RCT  
• 84 diabetic patients participated. The empowerment arm participated in a group session that incorporated two educational innovations (a conceptual metaphor to foster understanding, and team-based learning methods to foster active learning). The traditional diabetes education arm received a didactic group session focused on self-management and educational materials about the diabetes ABCs. Participants in both arms received individual review of their current ABC values.  
• A questionnaire evaluated knowledge, understanding and recall of the diabetes ABCs and was administered three months after enrollment in the study. At three months, participants in the empowerment group demonstrated greater understanding of the diabetes ABCs, greater knowledge of their own values, and greater knowledge of guideline-derived target goals for ABCs compared with participants in the traditional arm. | An active-learning, empowerment-based approach applied to diabetes education can lead to greater understanding and knowledge retention. An empowerment approach to education can facilitate informed, activated patients and increased performance of self-management behaviors. | Limitations of the study include relying on a novel measurement tool developed for the study. The standardized, blinded, consensus-building process used to score participants responses has no been used in prior work or validated in other populations. Wording of the ABC questionnaire during the follow-up data collection was more suited to the empowerment intervention process and may reflect participant’s familiarity with the process and materials rather than improvements in recall. The external validity may be limited by the demographics of the participants because they were largely male Veterans from a single regional health center. |
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| Eva Thors Adolfsson, Bengt Starrin, Bibbi Smide, Karin Wikblad | The aim of the current study was to explore patient’s experiences of participating in an empowerment group education program or receiving individual counseling. | - Qualitative study  
- N= 28 patients. Of these, 14 received individual counseling and the remaining 14 participated in 4-5 empowerment group sessions.  
- The semi-structured interviews were tape-recorded, transcribed verbatim and analyzed using qualitative content analysis. Individual counseling seemed vertical, characterized by one-way communication with care providers acting as superiors and patients as subordinates; giving advice they expected the patients to follow. The relationships in the empowerment group appeared to be horizontal, characterized by trust and mutual communication. In the empowerment group, the patients talked more about participatory learning, whereby the facilitators and patients shared their knowledge and experiences. The outcomes measured when comparing the relationships were learning and controlling the disease. | The patients in the empowerment group achieved the insight that diabetes is a serious disease but can be influenced when contributed to their experience of self-control. In individual counseling, controlling diabetes was labeled externally making it difficult for patients to accept responsibility for and control of their diabetes self-care. Vertical relationships, learning by compliance and external control seem to limit patient’s ability to take responsibility for their disease, while horizontal relationships, participatory learning and self-control may contribute to strengthening patient’s ability to influence and be actively involved in their own care. | More studies, both qualitative and quantitative, are needed on this issue; especially those that evaluate the long-term effects of participating in an empowerment group education program compared with the usual diabetic care. |
Synthesis of Evidence

The prevalence of diabetes has reached epidemic proportions. Diabetes is a chronic and progressive disease that requires lifelong medical attention in order to prevent significant adverse consequences. In efforts to lower these figures, researchers observed the impact of group interactive teaching versus individual education as it affects successful blood glucose control.

One of the main focuses of research on diabetes education is which method is most effective in maintaining blood glucose levels in diabetic patients. The results and conclusions of these studies range from one end of the spectrum to the other, making the educational approach to blood glucose control an extremely controversial topic. Group education and individual education seem to dominate research theories on effective glucose management; however, research goes back and forth between the two, supporting and refuting different elements of each approach.

Interactive group education functions to “relay information and recommendations in ways that increase patient’s ability to think critically and act autonomously” (Naik et al., 2011). Support for interactive group education is found in Naik and colleagues’ (2011) study, which focused on the empowerment element of interactive group teaching as it compared to the traditional didactic teaching. In this study, the empowerment group “incorporated... a conceptual metaphor to foster understanding, and team-based learning methods to foster active learning” (Naik et al., 2011). This intervention educated patients on the basic “ABCs” of their illness (hemoglobin A1C, systolic blood pressure, and low density lipoprotein cholesterol) and helped translate that knowledge into everyday life circumstances. Compared to the traditional teaching, this interactive group education had significantly more participants who “demonstrated a greater understanding of the disease, greater knowledge of their own values, and greater knowledge of
guideline-derived target goals” (Naik et al., 2011). Overall, the empowerment group offered an active method of learning, which led to “greater understanding and knowledge retention, [along with] increased performance of self-management behaviors” (Naik et al., 2011). In turn, the improved self-management behaviors accomplished glucose control (Naik et al., 2011). A qualitative study by Adolfsson, Starrin, Smide, and Wikblad (2007) “explored patients’ experiences of participating in an empowerment group education program versus receiving individual counseling.” The study concluded that the effectiveness of empowerment groups laid in the interactive group discussions, which facilitated mutual relationships and allowed patients to learn from and influence each other (Adolfsson et al., 2007). This experience led the patients to become active participants in the management of their diabetes. The qualitative results of the individual counseling intervention demonstrated that the one-way communication made patients feel subordinate to their health care providers, which “made it difficult for [them] to take responsibility for and control of their diabetes care” (Adolfsson et al., 2007). Overall, these studies indicate that one of the most important and influential aspects of modern diabetes management is patient involvement in their own care and education.

However, other research evidence suggests that active involvement in blood glucose control may not stem directly from the empowerment component of group interactive education. Welch et al.’s (2011) study of Diabetes Self-Management Education (DSME) and motivational interviewing showed that motivational interviewing, a therapeutic technique integral to the empowerment aspect of group education, was not linked to the improvement of blood glucose control. In fact, the DSME intervention without motivational interviewing showed greater improvement in blood glucose control (Welch et al., 2011).
Another study conducted on group education found that locally developed Diabetes Self-Management Education (DSME) programs, though less effective than DSME programs developed for research studies, “improved diabetes knowledge and self-management skills,” resulting in improved glucose control (Rygg et al., 2011).

On the other end of the spectrum, the effectiveness of individual education has its own support base of research evidence. One study, conducted by Sperl-Hillen et al. (2011), sought to compare the effects of group education, individual education, and the absence of education in patients with diabetes. Their findings showed that better glucose control, along with better psychosocial and behavioral outcomes, resulted from individual education as opposed to group education or no education at all (Sperl-Hillen et al., 2011). However, these results could be influenced by the greater mortality of group education intervention, which “could be indicative of patient preference for [individual education] and/or logistical difficulties associated with the [group education] approach, [such as] less scheduling flexibility” (Sperl-Hillen et al., 2011).

Additionally, individual education has proved to be effective to maintaining glucose control long-term. Norris, Lau, Smith, Schmid, and Engelgau’s (2002) study supports this hypothesis on the sustainment of blood glucose control. Their results suggest that extended “contact time [is] the only significant predictor of improved glycemic control. [Therefore,] in order to achieve clinically meaningful effects, interventions must involve adequate time spent with patients” (Norris et al., 2002).

In contrast, a study conducted by Radhakrishnan (2011) undermined the effectiveness of individual education by examining the specific impact of tailored interventions, a unique component of individual education, on self-management. Tailored interventions are costly, but they allow for the evaluation of a person’s originality and aim to carry out self-management
methods that are more suitable for a particular person’s unique needs and capabilities (Radhakrishnan, 2011). However, the results of this study determined that “tailored interventions [showed slight improvement in] self-management activities such as medication adherence, self-monitoring, exercise, smoking, and diet control,” and consequently, on maintaining blood glucose control (Radhakrishnan, 2011). Therefore, they are neither cost nor resource-efficient when considering their meek benefits.

Whereas some studies seek to fully support or refute one method of diabetes education, other studies acknowledge the beneficial elements of both group and individual education and attempt to combine those elements into one method featuring the best of both worlds. One of these studies assessed individual education (counseling only) versus individual education in combination with group education in adults with type 2 diabetes (Gucciardi et al., 2007). A major difference in the improvement of glycemic control between the two groups was not achieved at the end of 3 months. Both groups showed approximately a 0.5% decrease in blood glucose during the trial. Although, these results are not a drastic improvement, “a reduction of 0.5% in [blood glucose] is associated with a significant reduction in diabetes-related complication… which is clinically significant,” regardless of the applied method of education (Gucciardi et al., 2007). Positive outcomes such as improved attitudes and intentions towards nutrition adherence, which eventually lead to increased glycemic control, surfaced in both groups, but were more pronounced in the group receiving individual counseling and group education (Gucciardi et al., 2007). These results infer that individual counseling in conjunction with group education is more effective in maintaining and sustaining blood glucose control because of the eventual effects that positive attitudes and adherence have on diabetes self-management. For additional support, Gucciardi et al. (2007) propose that larger longitudinal studies be conducted
to establish the most successful education technique involving both group and individual components in maintaining long-term blood glucose control.

**Consistency of Evidence**

A. Replications of these studies showed inconsistent results. Each study agrees with the fact that any type of education is more beneficial than no education at all; however, they debate over which method of education is most effective. Results of these studies disagree on whether group education or individual education is the best method for DSME and which aspects of each contribute to their effectiveness. Some research says that group education is most effective due to its interactive, empowering nature; however, other research disagrees, saying that its motivational component has no effect on glucose control. Still, other research lies in favor of individual education because of its ability to focus specific interventions on individual patients’ needs, but another study’s results showed that costly tailored interventions were no more effective than less expensive standard interventions. Overall, the research concludes that neither group education nor individual education by themselves are the most effective method in achieving glucose control; however, certain aspects of each study contain significant benefits that, if combined, could provide a solid and effective method to glycemic control. Due to the inconsistency of evidence and recommendations currently available, it is difficult to pinpoint one standard of diabetes education that encompasses all evidence.

B. The majority of the studies considered were well designed and represented level I evidence or level II evidence. The primary sources included one systematic review, one meta-analysis, and four randomized controlled trials (RCTs). Both the systematic review and the two meta-analyses reviewed RCTs and established high, level I evidence for this study. The four RCTs provided level II evidence and used experimental design characterized by control,
manipulation, and randomization. The interventions of group and individual education were described in detail, as well as the methods and instruments used to obtain data and measure efficacy. The accessible patient population in all of the studies was a large, heterogeneous sample of the target population, making the results generalizable.

C. The recommendations for diabetes education methods remain inconclusive. No method has shown to be more effective than another in furthering patient knowledge of this chronic and progressive disease. Both individual and group education present certain criticisms and advantageous aspects particular to their approach. As a result, varying and conflicting recommendations resulted from the reviewed RCTs, systematic review, meta-analyses and qualitative study. Regardless of the presentation of educational material, any form of instruction improved the control and management of glucose by the diabetic patient.

D. The most important identified benefit for applying the evidence-based practice recommendation is glycemic control. Diabetic patients need to acquire appropriate education to develop methods of controlling and monitoring their glycemic levels. Keeping their levels within an appropriate range will delay the onset of numerous complications related to the disease. None of the subjects involved in the considered studies suffered from a deficit related to education methods by receiving one type over the other. Diabetic patients are not assuming any risks receiving one type of education versus another because, overall, they are still advancing their knowledge regarding blood glucose control.

E. Group education and individual education deliver comparable key educational components; however in relation to cost, group education may be more cost efficient and effective when compared to individualized teaching methods. With group education, information will need to be tailored more to the generalized population of the group, which may
be less expensive than interventions tailored specifically to one individual. Tailored interventions showed to be extremely costly “with expenses ranging from $200 to $800 per individual” (Radhakrishnan, 2011).

**Recommendations**

Patients with diabetes need to know and understand how to monitor and stabilize their blood glucose levels in order to exert control over their disease. Therefore, diabetes self-management education (DSME) is a key factor in achieving glycemic control. There is an abundance of research on the effectiveness of different education methods, but the results of these studies initiate a wide-spectrum of different recommendations. Overall, there is sufficient evidence criticizing both group interactive education and individual education to infer that neither one is the absolute most effective educational approach on its own. However, there is ample evidence in support of specific aspects of each. The consensus of research evidence concludes that the interactive component of group education and the customized component of individual education have substantial merit. In combination, these elements produce a diabetes self-management educational approach that results in improved glycemic control, as well as increased motivation in achieving glycemic control and greater understanding of their diabetic values.

The majority of our recommendations are Grade C because there wasn’t a solid, consistent recommendation of the best educational method. Of our 8 articles, 3 were in support of individual education, 2 were in support of group education, and only 1 was in support of combining group and individual education. However, individual and group education each had articles that questioned their effectiveness, whereas combined group and individual education didn’t. Without a current, definitive recommendation on this issue, more studies and trials
should be conducted concerning the effectiveness of various educational methods available to the patient. In the meantime, the interactive component of group education and the customized aspect of individual education should be integrated into diabetic patient care and teaching.

The recommendation for individual education has the most supporting evidence from the articles, however the grade for this recommendation is a C. This is because there is fair evidence that this intervention is effective in achieving glucose control, but does not show consistent results. The evidence supporting individual education illustrates that individual education was more effective in establishing short-term blood glucose control than group education (Sperl-Hillen et al., 2011; Welch et al., 2010; Radhakrishnan, 2011). Additionally, long-term individual interaction with diabetes health care providers and educators is necessary in sustaining the achieved glycemic control (Norris et al., 2002).

Additionally, supporting evidence warranted group education as a recommendation for diabetes glycemic control. The recommendation for group education is also a grade C because the results are inconsistent across diabetes education research. The group education methods that proved most effective included an empowerment component to their education, which improved patient knowledge of diabetes and their blood glucose levels, which in turn facilitated self-management behaviors leading to glycemic control (Naik et al., 2011; Adolfsson et al., 2007).

The recommendation for group education combined with individual education has the least amount of quantitative supporting evidence. Despite the lack of research that specifically supports a combined group and individual method, the aforementioned evidence agrees that both group and individual have effective, contributing aspects. The grade for this recommendation is a B because this study was a RCT that showed health benefits. The education methods that provide individual counseling in conjunction with group education showed greater diabetic achievements
in motivation, skills, and glycemic control (Gucciardi et al., 2007).
References


