Measuring the Perceived Self-Management Practices of Adult Type 2 Diabetics With and Without Completion of a Diabetes Self-Management Education Program

by

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Signature Page

This capstone project, *Measuring the perceived self-management practices of adult type 2 diabetics with and without completion of a diabetes self-management education program* was prepared under the direction of the faculty mentor and practice partner. It is accepted by the faculty mentor, practice partner, and Director of the program in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice at the University of Southern Indiana.

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Dedication and Acknowledgements

No student conducts a capstone project in a vacuum. There are several people who helped me along the way, and I will forever be in their debt. First of all I thank God for giving me the courage and the will to pursue doctoral work. My wife, Manuela contributed significantly to this capstone project not only by constantly encouraging me, but also by allowing me the time and concentration necessary to finish the project. My faculty advisor, Dr. Tracy Kinner continuously supported and encouraged me. Without Dr. Kinner's advisement, comments, and helpful critique, my work would have been much more difficult and less scholarly. I wish to thank my practice partner, Jamie Lee, RN, CDE. Because of Jamie, I could access graduates of the Lake Cumberland District Health Department's diabetes self-management education program. Jamie helped me with many mailings to potential capstone participants. Dr. Tracey Gaslin generously gave of her time and assisted me with data analysis. I would like to thank the USI DNP faculty and my fellow classmates for their continuous support. Most of my diabetic patients do not appreciate the gravity of their disease. At 43 years of age, diabetes claimed the life of my dear friend, Reverend Purnell Spicer. It is to his memory that I dedicate this capstone project.

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Executive Summary

Problem: The medical consequences and financial costs of diabetes are staggering. In 68 Kentucky counties, diabetes rates range between 11% to 12. 6%. This rate is higher than the national percent incidence. In south central Kentucky, there is an expansive diabetes self-management education (DSME) program, which offers free comprehensive education through 10 county health departments. The essential problem is that an outside independent investigator using psychometrically sound instrumentation has not evaluated the program.

Purpose: To evaluate perceived self-management practices of type 2 adult diabetics with and without completion of a DSME program in south central Kentucky, and to share the findings with the diabetes educators. The educators will benefit from this project through evaluation and appraisal of program effectiveness.

Objective: The capstone objectives were threefold. The first objective was to implement measurement of the perceived self-management practices of type 2 adult diabetics after completion of the DSME program. The second objective was to compare these findings against a control sample. The third objective was to share the findings with the primary stakeholders, the diabetes educators.

Project Outcome: La Greca's Self-Care Inventory-Revised (SCI-R) survey measures perceived diabetes (DM) self-management practices. Demographic questions and the SCI-R were given to two convenience sample patient groups: a DSME program sample (N=52) and a control sample (N=52) who had never attended DSME training.

Results: A t-test was performed between the samples' mean scores of the SCI-R survey. There was not a statistically significant difference between the education sample and the non-education sample based upon an alpha of 0.05. The t-test revealed a p value of 0.059. However, there was a clinically significant difference between samples as evidenced by the education sample's higher means on each survey item compared to the non-education sample.

Recommendations: In regard to portion control the education sample's mean was 3.8 while the non-education sample's mean was 3.058. The diabetes educators must spend more time teaching their DSME participants how to implement mealtime portion control. Eating meals and snacks on time is a way diabetics control blood sugar. The education-sample's mean of eating meals and snacks on time was 3.70, and the non-education sample's mean was 3.058. Reading food labels is important. The education-sample's mean score of reading food labels was only 2.429 while the non-education sample's mean was 1.462. The DSME should stress carrying quick acting sugar to treat low blood glucose. The education sample's mean score of carrying quick acting sugar to treat hypoglycemia was 3.694, and the non-education sample's mean was 2.712. With respect to wearing a medic alert identification, as evidenced by the education-sample's mean score of 2.449, the DSME has not reinforced the point sufficiently. The non-education sample's mean score of wearing a medic alert bracelet was 1.058. Despite the fact that the LCDHD diabetes educators teach the importance of exercise, the DSME participants are not engaged in physical activity enough, as their exercise mean was 3.42 while the non-education sample's mean was 3.038.

Problem Statement

The medical consequences and financial costs of diabetes are staggering. Poorly controlled diabetes is responsible for a twelvefold increase in stroke and heart disease risk and a sixteenfold risk of peripheral neuropathy (Nazarko, 2009). Diabetics are at increased risk for cardiac complications and retinopathy, which may result in blindness. In addition, diabetes reduces overall life expectancy by 10-15 years (Nazarko, 2009). In 2010, diabetes affected 8.3% (25.8 million) of the United States population, and among diabetics 65 years and older, in 2004, heart disease was seen on 68% and stroke appeared on 16% of death certificates (Centers for Disease Control and Prevention [CDC], 2011). From 2005-2008, 28.5% diabetics 40 years and older suffered from diabetic retinopathy. Significantly increasing risk for blindness, 4.4% of the diabetic retinopathy patients had severe diabetic retinopathy. Approximately 65,700 diabetics suffered nontraumatic lower-limb amputations in 2006, and diabetes was the direct cause of kidney failure, comprising 44% of all new cases in 2008 (CDC, 2011). The financial burden of diabetes is sobering. In 2012, the total cost of diabetes in the United States was $245 billion. Direct medical costs were $176 billion while $69 billion were indirect costs such as disability, work loss, and early death (American Diabetes Association, [ADA], 2013a).

An appraisal of literature was conducted, and data collection involved searching electronic databases. Searches in the Cumulative Index to Nursing and Allied Health Literature and Medline databases were completed using the following criteria: journal articles published in English between 2003 and 2012, possessing the word diabetes in the title, and the key words self-management, education, and self-care were utilized. The search concentrated on professional journal articles from nursing and from other disciplines. Only those articles that were peer reviewed with references and abstracts available were included. Additional inclusion

and exclusion criteria included clear statements about the topic and clearly articulated research questions. Moreover, clearly stated research designs with unambiguous, concisely stated results were also required inclusion criteria. The search revealed a plethora of literature supporting diabetes self-management education (DSME) programs as ways to reduce the medical consequences and costs of diabetes (Atak, Gurken, & Kose, 2008; Clarke, 2009: Fitzner et al., 2008; Gill, Kumar, & Wiskin, 2008; Hicks, 2010; Moriyama et al., 2009; New, 2009; Sigurdardottir, 2005; Siminerio, Ruppert, Emerson, Solano, & Piatt, 2008; Sousa, Zauszniewski, Musil, Price Lea, & Davis, 2005; Tol et al.,2012; Wu et al., 2011).

The ADA Standards of Medical Care for type 2 diabetes mellitus (T2DM) represent the best evidence for practice. These standards are published annually as a supplement in the official journal of the ADA, *Diabetes Care* (ADA, 2013b). However, no literature was found that rated DSME programs according to ADA guidelines. Clearly, the prodigious evidence in support of DSME as a means to reduce morbidity and mortality coupled with the high medical and financial costs of diabetes necessitates measurement of existing DSME programs.

Located in south central Kentucky and offering free comprehensive education through 10 county health departments, the Lake Cumberland District Health Department (LCDHD) directs an expansive DSME program. In 2008, the estimated combined population of these 10 counties was 208,146 people (United States Census Bureau State & County Quick Facts [US Census], 2011).

The Kentucky statistics for diabetes are grim. In 2011, the diabetes medical costs for Kentucky totaled $1.34 billion while the loss of productivity was $702.5 million. The total cost of diabetes care was a devastating $2.043 billion (Kentucky Diabetes Fact Sheet, 2011).

Kentucky diabetics suffered the following in 2009, as 19% of all hospital admissions were diabetes related: 2,567 hospitalizations for Diabetic Ketoacidosis; 1,222 lower extremity amputations; and 8,446 admitted for stroke. In addition, 39,332 diabetics were admitted for heart disease, 23,328 were admitted for congestive heart disease, and diabetics accounted for 15,605 emergency department visits (Kentucky Diabetes Fact Sheet, 2011).

In 2010, the estimated number of Kentuckians with diabetes was 10% of the population or 370,000 residents while the national average at that time was 8.7%. Including the 10 counties served by LCDHD's DSME program receiving evaluation in this capstone project, 68 of Kentucky's 120 counties diabetes rates ranged between 11% to 12.6%. This rate was higher than the national percent incidence (Kentucky Diabetes Fact Sheet, 2011).

Comprising 10 Kentucky counties, the dire evidence thus presented demands a program evaluation of LCDHD's DSME program. The education has great potential to aid this diabetic population who suffers greater than the national average. The essential problem is that an outside independent investigator using psychometrically sound instrumentation has not evaluated LCDHD's program.

Purpose Statement

The purpose of this capstone project was to evaluate perceived self-management practices of type 2 adult diabetics with and without completion of a DSME program in south central Kentucky, and findings were shared with the diabetes educators. The educators benefited from this project through evaluation and appraisal of program effectiveness.

Theoretical Framework

Pender's Health Promotion Model (HPM) was chosen to frame the capstone project. Appraising the suitability of Pender's HPM as a theoretical framework for DSME necessitated a

careful assessment of the conceptual relationships between the HPM and DSME. See Appendix A for a schematic depiction of the HPM. Appendix B reveals the conceptual relationships between the HPM and DSME. The following concepts of the HPM are specific to DSME: individual characteristics and experiences, behavior-specific cognitions, and behavioral outcome. There are two subcomponents of individual characteristics and experiences: prior related behavior and personal factors. Prior behavior influences future behavior (Pender, 1996; Pender, Murdaugh, & Parsons, 2011). Prior behavior exercises direct and indirect effects on the prospect of entering into health-promoting behaviors. In respect to DSME, the prior related behavior is understood as poor diabetes management resulting in poor glycemic control, thus motivating the individual to enter into DSME. Regarding personal factors, Pender explained that psychologic factors involve self-esteem, self-motivation, and perceived health status. A concept analysis of self-management in diabetes identified perceived ability and perceived health status as antecedents. An individual is motivated to enroll in DSME if he or she believes in his or her ability to perform self-management and if he or she perceives diabetes as a chronic disease requiring management.

Behavior-specific cognitions and affect are composed of six subcomponents: perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences, and situational influences. People tend to invest in actions that have a high probability of positive outcomes (Pender et al., 2011). The goals of DSME include: metabolic control, avoidance of complications, the enhancement of life quality by helping the patient to modify actions, and boost knowledge to guide change, concluding in positive attitudes and the efficacious management of diabetes (Atak et al., 2008). Such perceptions of the health benefits highly motivate individuals to enter into DSME. With respect to perceived barriers to

action, Pender et al. (2011) provides the example of loss of satisfaction from giving up health-damaging behaviors such as smoking or eating high-fat foods to assume a more healthful lifestyle as a barrier. In like manner, exercise, weight loss, and checking blood glucose can be perceived as inconveniences and block diabetics from engaging in DSME, as significant life-style changes are required.

Perceived self-efficacy is the personal view of one's capability to carry out the actions that would lead to healthy change. The perception of one's competence promotes motivation to participate in actions in which one excels (Pender et al., 2011). According to Pender et al. (2011), "the more positive the affect, the greater the perceptions of efficacy" (p. 47). Self-efficacy in diabetes is the self-assurance to follow the suggested menu and the confidence to choose the right foods (Atak et al., 2008). In a concept analysis of self-management in diabetes, self-efficacy was identified as an attribute. Diabetes educators work to build constructive performance adjustments in their participants, and their mediations have proven to be effective (Fitzner et al., 2008).

In respect to activity-related affect, long-term maintenance of behaviors is affected by the resultant feeling state (Pender et al., 2011). If feeling healthy and energized through proper control over diabetes creates a positive emotional state, the participant is likely to continue the behaviors for the long term. On the other hand, if the participant perceives DSME as overly controlling and the life-style changes as stifling, the participant is less likely to engage for the long term.

Family, peers, and health providers exercise interpersonal influences on health-promoting behaviors (Pender et al., 2011). With regard to DSME, both diabetes educators and primary care providers exercise considerable influence as they teach and encourage participants and patients

to engage in DSME. Some situations directly affect behaviors through exercising control over the environment (Pender et al., 2011). In like manner, diabetics are educated to control their environment through removing all sweets and unhealthy foods from their homes. Pender et al. (2011) define immediate competing demands and preferences as: "alternative behaviors that intrude into consciousness as possible courses of action immediately prior to the intended occurrence of a planned health-promoting behavior" (p. 49). Immediate competing demands can block a diabetic from diabetes management behaviors such as exercise and proper diet. The individual may pass the mall on the way to the gym and become distracted resulting in shopping in place of exercise (Pender et al., 2011).

Commitment to a plan of action embraces these underlying cognitive processes: "commitment to carry out a specific action at a given time and place and with specified persons or alone, irrespective of competing preferences (implementation intention), and identification of definitive strategies for eliciting, carrying out, and reinforcing the behavior" (Pender et al., 2011, p. 49). A committed individual often fails in the health behavior without a useful strategy for its achievement. Commitment and strategy are at the heart of DSME. Diabetes educators strive to foster commitment in their students to adhere to the gained knowledge and newly acquired skills. In addition, participants are taught strategies to remain compliant. Health-promoting behavior is the outcome of the HPM (Pender et al., 2011). Health-promoting behavior is the individual's search to attain positive health outcome. In like manner, DSME empowers participants to maintain glycemic control.

Project Plan

Scope of the Change

In south-central Kentucky, the LCDHD directs a DSME program that offers free comprehensive education through 10 county health departments including Adair, Casey, Clinton, Cumberland, Green, McCreary, Pulaski, Russell, Taylor, and Wayne. The estimated combined population in 2011 was 208,100 people (US Census, 2011), and the prevalence of diabetes was between 11% and 12.6% (Kentucky Diabetes Fact Sheet, 2011). As a result, there was a significant number of people impacted as evidenced by 22,891 to 26,220 diabetics living in these 10 counties in 2011. The purpose of this capstone project was to evaluate perceived self-management practices of type 2 adult diabetics with and without completion of a DSME program in south central Kentucky. The capstone focused on all 10 counties.

Setting

A 30-member district board of health governs the LCDHD with representation from each of the 10 counties' local boards of health. In addition, the board employs an executive director and a medical director. There are 13 department heads and approximately 270 staff members throughout the 10 counties.

The education was a series of four weekly sessions. Each session lasted two and one-half hours. The series was titled "Living Well with Diabetes." Preregistration was required. The LCDHD receives many referrals from area primary care providers, but a referral is not required. Session one dealt with describing diabetes, coping with diabetes, physical activity, nutrition-healthy eating and goal setting. Session two involved monitoring, acute complications, nutrition-plate method, portion sizes, sugar substitutes, and physical activity. Topics for session three comprised pattern management, medications/insulin, exercise & diabetes, nutrition-carbohydrate

counting, and food labels/meal planning. Session four education foci entailed chronic complications, daily care: skin/foot care, sick days, tobacco use, nutrition-healthy heart, weight loss, fast food, and physical activity (Lake Cumberland District Health Department Home Page, n.d.).

Group

The target sample consisted of a convenience sample of 52 diabetes education participants and the four diabetes educators. Including the LCDHD diabetes program coordinator, four diabetes educators were responsible for education throughout the 10 counties. Jamie Lee, RN, CDE, diabetes program coordinator served as practice partner. Lee was responsible for mailing a packet of materials containing a cover letter, the survey instrument, the survey demographics, the informed consent, and a return, preaddressed, stamped envelope to program graduates. Data collection began after the University of Southern Indiana's Internal Review Board (IRB) approved the project proposal. Beginning in October 2013 and concluding in December 2013, program graduates were invited to complete the instrument measuring their perceptions of diabetes self-management skills.

To further understand the LCDHD's DSME program's impact on program graduates' perception of diabetes self-management abilities, a second sample of 52 diabetic participants who never attended DSME completed the same demographic questions and survey instrument. Beginning in April 2014 and concluding in May 2014, the author recruited non-formal DSME participants from the author's medical practice. The author's employer granted facility permission to recruit diabetic non-education patients' capstone participation. See Appendix C. Both samples were guaranteed that every attempt was made to keep information confidential, and that the records would be available only to the diabetes education program and to the

capstone author. The participants were assured that data was reported as a group and not individually. Inclusion criteria for the education sample included a diagnosis of T2DM, and graduation of the DSME program. In addition, each participant was 21 years of age or older. Inclusion criteria for the non-education sample were the same as for the education sample with the exception that they were required to have never attended DSME.

Obtaining LCDHD IRB approval was not necessary because the organization relied upon the University of Southern Indiana's IRB approval. See Appendix D. A packet including a cover letter, (Appendix E) informed consent, (Appendix F) demographics survey (Appendix G) and survey instrument (Appendix H) was mailed to DSME program graduates. The cover letter explained the purpose of the project and provided a means to contact the capstone author, and the survey instrument included instructions for completing the instrument. The demographics survey included participants' age, race, gender, marital status, highest level of education, family yearly income, date of program graduation, and ability to read and write English. Furthermore, participants were asked if they have been diagnosed with diabetic neuropathy and renal disease. In December 2014, the completed capstone project report was shared with each diabetes educator. The author recruited non-education participants during patient encounters. In place of a cover letter, the author verbally explained the purpose of the project. Patients who agreed to participate signed the same consent form that was given to the education sample, and the author guided the participants through the same demographic questions and survey instrument that was given to the DSME graduates.

Tools/Measures

The purpose of this capstone project was to evaluate perceived self-management practices of type 2 adult diabetics with and without completion of a DSME program in south

central Kentucky, and findings were shared with the diabetes educators. The study design consisted of a convenience sample taken from graduates of the LCDHD DSME program. Participants identified demographics to identify their age, gender, marital status, highest level of education, family income, date of graduation from the program, and ability to read and write English. In addition, participants were asked if they have a diagnosis of diabetic neuropathy and renal disease. Participants completed La Greca's Self Care Inventory-Revised Version (SCI-R) survey (Weinger, Buttler, Welch, & La Greca, 2005). The survey measured the samples' perceived diabetes self-management practices. Dr. La Greca gave permission for the use of the SCI-R in this capstone project. See Appendix I. As previously discussed, in order to strengthen findings, the same demographic questions and survey instrument was given to a second convenience sample of 52 non-DSME participants.

The SCI-R is a self-report survey that produces ordinal level data. The SCI-R's Flesch-Kincaid Reading level is sixth grade (Weinger, et al., 2005). Participants rated 15 items on a five-point Likert scale that reflected how well they perceived themselves to abide by recommendations for self-care during the past one to two months (Weinger, et al., 2005). The original Self-Care Inventory (SCI) was a 14-item self-report that measured participants' perceptions of their faithfulness to diabetes self-care recommendations over the past one to two months. After collaboration with focus groups conducted with diabetes educators, items were developed to reflect type 1 treatment including monitoring blood glucose, insulin and food regulation, exercise, and emergency precautions, and of course, many of these items apply to T2DM. A multidisciplinary panel including nursing, psychology, and nutrition was then assembled to assess the SCI for content validity and consistency with current practice (Weinger, et al., 2005). Recommended revisions are reflected in the SCI-R.

To evaluate the validity and reliability of the SCI-R, a psychometric evaluation was completed (Weinger et al., 2005). To study the instrument's properties, three data sets of adult type 1 and type 2 diabetic participants were utilized. Principle component and factor analysis was used to determine if a general factor or common factors were present. Associations with measures of theoretically related concepts were studied to determine SCI-R concurrent and convergent validity. Internal reliability coefficients were calculated. Responsiveness was measured by using paired *t*-tests, effect size, and Guyatt's statistic for type 1 patients who completed psychoeducation.

The results identified a general factor but no consistent common factors. Internal consistency of the SCI-R was $\alpha = 0.87$. Correlation with a measure of frequency of diabetes self-care behaviors was $r = 0.63$, providing evidence for SCI-R concurrent validity. The SCI-R correlated with diabetes-related distress ($r = -0.36$), self-esteem ($r = 0.25$), self-efficacy ($r = 0.47$), depression ($r = -0.22$), anxiety ($r = -0.24$), and HgA1C ($r = -0.37$), supporting construct validity. Responsiveness analyses demonstrated SCI-R scores improved with diabetes psychoeducation with a medium effect size of 0.62 and a Guyatt's statistic of 0.85. Clearly, the SCI-R was found to be a psychometrically sound measure of perceptions of perceived self-management practices of type 2 adult diabetics (Weinger, et al., 2005).

Project Tasks (Activities)

The capstone project was completed in five steps: development of the capstone project; implementation of the project; data collection; data analysis and dissemination of the capstone project. See Appendix J for a detailed timeline. The first step of the project was to meet the LCDHD diabetes education coordinator and secure her as a practice partner. All necessary permission from the LCDHD was obtained at this time. The next task was to secure La Greca's

permission to use her SCI-R for statistical evaluation. The third action was to complete the proposal. The fourth step was to submit the proposal to the University of Southern Indiana's IRB. Upon the IRB's approval of the project, data collection began. Upon conclusion of data collection, data analysis commenced. The next step was to complete the final written report. The completion step of the project was dissemination of the capstone project.

Resources and Supports

Certain support was necessary for the successful completion of this capstone project. Jamie Lee, RN, CDE, DSME coordinator and capstone author's practice partner and Dr. Tracy Kinner, the capstone author's faculty advisor were strong supports. The remaining diabetes educators' support was critical. Support from Shawn D. Crabtree, Executive Director of the LCDHD and Dr. Christine Weyman, Medical Director of the LCDHD was important. Permission from Taylor Regional Hospital to recruit a second convenience sample of 52 diabetic non-formal DSME participants from the author's primary care patient population was vital.

Risks and Threats

There were potential barriers to consider. One possible obstacle was that the DSME coordinator would fail to mail packages inviting potential participants in a timely manner. This was overcome through frequent communication with the practice partner. Another potential threat was the possibility of recruiting insufficient numbers of participants. Frequent contact with the practice partner assured a sufficient number of capstone participants. Permission from the hospital that owns the clinic to recruit the non-DSME control sample was critical. Failure to receive permission would have posed an insurmountable problem. This problem was avoided through communication with hospital administration.

Strategic Plan

An effective business-planning instrument, strategic planning is used within an organization to forge positive change. Useful when applied to nursing, strategic planning solves problems and directs decisions (Sare & Ogilvie, 2010; Schaffner, 2009). The LCDHD offers community-based enterprises, and preventive health care assistance for 10 Kentucky counties: Adair, Casey, Clinton, Cumberland, Green, McCreary, Pulaski, Russell, Taylor, and Wayne. These services include smoking cessation assistance, breast and cervical cancer screening, breastfeeding services, colon cancer screening, family planning, diabetes screening, and DSME. Other assistance includes prenatal care, sexually transmitted disease testing and treatment, and tuberculosis screening and treatment. In addition, children's and adolescent's immunizations are provided. Finally, newborn screenings, school health exams, fluoride varnishings and lead screenings are offered.

According to the mission statement, **"**the LCDHD will prevent illness and injury, promote good health practices and assure a safe environment" (LCDHD, para.1, n.d.). The vision statement assures **"**the LCDHD will be a leader in preventive health care, health education, and environmental monitoring in collaboration with the public and private sectors. We will show compassion and respect as we strive to improve the health of our communities" (LCDHD, para. 2, n.d.). The vision statement iterates the mission statement, and the two will be analyzed as a single assertion. Considering the LCDHD's array of preventive health services, arguably, the mission and vision statements reflect the organization. The authenticity of the mission and vision statements is understood through the team approach of physicians, nurse practitioners, registered nurses, licensed practical nurses, registered dieticians, and certified nutritionists.

Ensuring stakeholders and promoting a good environment, the LCDHD is in route to achieve its mission of preventing illness and injury. The Kentucky Department for Public Health (KDPH) directed a readiness review of health department preparedness programs. The review concentrated on 15 national public health preparedness competences. In respect to local health preparedness, the review was designed by the KDPH Preparedness Branch to help health departments verify strengths and identify areas needing improvement. The LCDHD is one of eight programs statewide scoring 100% (LCDHD, n.d.). The preventive services are offered throughout the year, and including this author, many area doctors, nurse practitioners and physician assistants respect the efforts of the LCDHD and refer patients to their services.

Interviews were conducted with the Adair County LCDHD nursing supervisor and one LCDHD nurse diabetes educator. The answers revealed that values among nurses and all employees include effective communication, collaboration, meaningful recognition, and authentic nurse leaders. Clearly, the LCDHD's pursuit of practice excellence and patient advocacy is in alignment with its mission to prevent illness and promote good health practices. In harmony with LCDHD's pursuit of excellence, the author's capstone project measured the LCDHD's DSME graduates' perception of diabetes control and helped the educators shape the DSME program's curriculum.

This author's capstone project harmonized with the LCDHD 's mission and vision. Supporting the LCDHD's mission and vision to prevent diabetes complications the author's capstone project measured the perceived self-management practices of type 2 adult diabetics after completion of the LCDHD's DSME program. Findings were shared with the diabetes educators, the major stakeholders. The purpose of this practice-based project was to shape future DSME curricula. More specifically, the capstone results informed the educators of their impact

on the following criteria: checking and recording blood glucose; medication administration including oral and insulin; and eating correct food portions. In addition the results briefed the educators concerning their effect on: eating meals/snacks on time; keeping food records; reading food labels; treating low blood glucose; clinic appointments; exercise; and adjusting insulin based on glucose values, food, and exercise. Moreover, the capstone project was in alignment with the author's office setting, Taylor Rural Health. The author provides primary care to many diabetic patients, and provides aspects of DSME in each clinical encounter.

Marketing Plan

Determining the most effective marketing plan for this project necessitated a careful examination of the product, price, place, and promotion. The product included sharing the capstone project results with the diabetes educators. Under the direction of the LCDHD, the places were the 10 county health departments where the diabetes self-management education occurs. The promotion consisted of informing the diabetes educators of the project. In May 2013, upon completion of the project proposal, the program coordinator and each diabetes educator received a copy of the capstone proposal.

Beginning in August 2013, the principle means of communication with the coordinator was through email and phone calls. The purpose of the emails was to remind the DSME coordinator to begin mailing packets containing cover letters, informed consents, demographic questions and instruments to program graduates. With consideration of price or product value, it was determined that cover letters served to remind the coordinator of participation benefits. The capstone results may guide future program approaches. Moreover, the project results informed the educators of the impact of their education upon participants.

Upon completion, the diabetes coordinator and each diabetes educator received a copy of the final capstone report. In addition the project was marketed to program graduates through mailings. DSME graduate participants received packets in the mail including a cover letter, informed consent, survey instrument, demographic questions, and a stamped return envelope. The capstone author invited non-education diabetic patients to participate during one-to-one patient encounters. After giving an explanation of the capstone, the capstone author provided informed consents and survey instruments to non-education diabetic patients. The capstone author collected the informed consent and survey instrument at the conclusion of the patient encounter. See Appendix K for a complete summary of the marketing plan.

Outcome Objectives

Beginning in October 2013 and concluding in November 2013, the first project objective was the measurement of the perceived self-management practices of adult type 2 diabetics after completion of the LCDHD DSME program. Next, from April 2014 to May 2014, the capstone author measured a sample of 52 diabetic non-education participants' perceived self-management practices. The third objective was to share the completed capstone with the LCDHD diabetes education coordinator and the diabetes educators in December 2014.

Process Objectives

The first objective was to meet the coordinator of the diabetes self-management education and secure her as a practice partner. Obtaining La Greca's permission to use the SCI-R was paramount. The next step was to complete the capstone proposal, and to submit the proposal to the University of Southern Indiana's IRB. Gaining the capstone author's facility permission to recruit non-education diabetic patients was crucial. Data collection from the

education and non-education samples commenced and concluded. Thereafter, data analysis began and was completed. Dissemination of the capstone will comprise the final phase.

Financial Plan

Accounting for all capstone project costs, the overall budget was $3,563.98.

Personnel. The cost to the LCDHD was based upon the hourly salary of the LCDHD's DSME coordinator. Thirty percent was added so as to reflect benefits. When preparing the budget, it was important to consider that people who work within the capstone author's organization are required to either be salaried or paid per hour (Higdon & Topp, 2004). Moreover, Higdon and Topp, (2004) recommend a plan to determine how much money to budget based on salaries. The following formula informed the capstone author: "…annualized base salary/12 [months] x number of months appointed to project x percentage effort) and corresponding fringe benefits costs (salary requested x institutional fringe rate)" (Higdon & Topp, 2004, p. 924). Further, budget considerations should reflect straight-time hours, overtime, shift differentials, premiums, and employee benefits (Finkler, Jones, & Kovner, 2013). The costs included four hours of time multiplied by $37.00/hour allocated for the diabetes education coordinator to mail instruments, demographic surveys, cover letters, and informed consents to DSME program graduates. The costs to the capstone author were based on an hourly rate of $53.00. Thirty percent was added to the hourly rate to include benefits. The time and costs were based on twelve hours of preparing mailings to participants and time spent recruiting non-DSME diabetic patients from the author's clinical setting. The total cost for personnel was $784.00.

Materials. The total for postage, envelopes, address labels, instrument copies, copies of the capstone project proposal, and final report was $799.98.

Dissemination. Dissemination fees at a regional and a national conference are estimated to cost $1980.00. This estimation included the national conference fee, airfare, ground transportation, hotel fee, meals, and driving to a regional conference. See Appendix L for a complete summary of estimated costs.

Outcomes/Evaluation Plan

The first objective was to begin implementation of measurement of perceived self-management practices of adult type 2 diabetic graduates of the LCDHD DSME program by October 2013. A convenience sample of 52 graduates of the LCDHD DSME program identified demographics and completed La Greca's SCI-R survey. Next, in April 2014 measurement of perceived self-management practices of adult type 2 diabetic non-education participants commenced. For the purpose of conducting *t*-tests between two samples, a second convenience sample of 52 non-education participants reported demographics and answered La Greca's SCI-R survey. Cohen's (1992) seminal discussion of power, effect size, and significance criterion served as a guide to determine the necessary sample size. As most research in nursing has a modest effect size, the correct sample size to identify a medium effect with a power of 0.8 and an alpha level of significance of 0.05 for statistical tests to be performed was 64 (Cohen, 1992). The raw collection of data from the two samples' participants' perceived diabetes self-management practices and demographics was the outcome in May 2014.

Data analysis of the measurement of perceived self-management practices among graduates of the LCDHD DSME program and non-education diabetics concluded in July 2014. The outcome was the final report of the data analysis findings. In December 2014, the completed capstone project was shared with the primary stakeholders, the diabetes education

coordinator and the three other diabetes educators. See Appendix M for a complete summary of the evaluation plan.

Human Subjects Protection

The IRB application was submitted to University of Southern Indiana's IRB August 2013. The LCDHD gave permission to proceed with the project provided that the university granted IRB approval. See Appendix D. The IRB granted Expedited approval September 19, 2013. See Appendix N. The author resubmitted data collection protocol revisions to the IRB September 2013, and was granted Expedited approval October 10, 2013. See Appendix O.

Results

Preliminary Analysis of Data

Prior to analysis, the data were managed in several ways. The questionnaires were first coded for participant number, gender, age, marital status, race, English reading and writing ability, presence of T2DM, DSME program graduation date, presence of diabetic neuropathy, presence of chronic kidney disease, highest level of education, and family income. Data were then placed in an Excel spread sheet. Once data were entered, it was visually inspected for errors and missing data and then compared a second time against each returned survey instrument. Excel, version 14.4.6 was used to analyze the data.

Education Sample

Descriptive statistics were performed to determine sample characteristics and differences among the categories of gender, age, marital status, race, English reading and writing ability, presence of T2DM, DSME program graduation date, presence of diabetic neuropathy, presence of chronic kidney disease, highest level of education, and family income. The 52 participants were predominately Caucasian (94.2%) and mostly female (55.7%). All participants had T2DM,

and the majority (65.3%) of the sample was married. All read English, and one participant could not write English. Nine participants (17.3%) had diabetic neuropathy, and four (7.6%) had chronic kidney disease. Education level ranged between grade school and master's level. The DSME program graduation date ranged from 2009-2014. Participant ages ranged from 32-87 with a mean age of 64 (*SD* = 11.5) years. Annual income levels of the participants ranged from $7,000 to $90,000, and the average income was $26,700.

Table 1

Frequencies of Education Sample

Descriptive Statistics		Frequency (%)
Gender	Male	19 (36.5)
	Female	29 (55.7)
	Missing	4 (7.6)
Marital Status	Married	34 (65.3)
	Single	4 (7.6)
	Divorced	7 (13.4)
	Widowed	4 (7.6)
	Separated	3 (5.7)
Race	African American	1 (1.9)
	Asian	1 (1.9)
	Caucasian	49 (94.2)
	Missing	1 (1.9)
Read English		52 (100)
Write English		51 (98)
Highest level of education	Did not graduate high school	8 (15.3)
	High school graduate or equivalency	31 (59.6)
	Some college or college graduate	9 (17.3)
	Beauty School	1 (1.9)
	Master's	3 (5.7)
Have T2DM		52 (100)
Program graduation year	2009	1 (1.9)
	2010	2 (3.8)
	2011	8 (15.3)
	2012	14 (26.9)
	2013	18 (34.6)
	2014	1 (1.9)
	Missing	8 (15.3)

Descriptive Statistics		Frequency (%)
Presence of neuropathy	Yes	9 (17.3)
	No	41 (78.8)
	Missing	2 (3.8)
Presence of kidney disease	Yes	4 (7.6)
	No	48 (92.3)
Family income	7K-20K	19 (36.5)
	21K-50K	19 (36.5)
	51K-90K	1 (1.9)
	Missing	13 (25.0)

Participants completed La Greca's SCI-R survey (Weinger, et al., 2005). The survey measured the participants' perceived diabetes self-management practices. Participants rated 15 items on a five-point Likert scale that reflected how well they perceived themselves to abide by recommendations for self-care during the past one to two months (Weinger, et al., 2005). For each survey question, participants could choose: 1 (never); 2 (rarely); 3 (sometimes); 4 (usually) and 5 (always). Each of the five possible responses represented the participants' self-perception of his or her mastery of diabetes self-management behavior. For this section of data analysis, any returned instrument with three or more missing data was eliminated. Because no participant in the sample had type 1 diabetes, survey item three: *if type 1 check ketones when glucose is high* was eliminated.

Table 2

Survey Results of Education Sample

Survey Item	*n*	Sum	*M*	*SD*	*n* = not taking diabetes pills or insulin	*n* = never had low blood glucose	*n* = not on insulin
Check blood glucose with monitor	50 (96%)	208	4.160	0.912			
Record blood glucose levels	49 (94%)	192	3.918	1.222			
Take the correct dose of diabetes pills or insulin	50 (96%)	210	4.884	0.324	7 (13%)		

Survey Item	*n*	Sum	*M*	*SD*	*n* = not taking diabetes pills or insulin	*n* = never had low blood glucose	*n* = not on insulin
Take diabetes pills or insulin at the right time	51 (98%)	208	4.727	0.451	7 (13%)		
Eat the correct food portions	50 (96%)	190	3.8	0.670			
Eat meals/snack on time	50 (96%)	185	3.70	0.707			
Keep food records	49 (94%)	119	2.429	1.242			
Read food labels	49 (94%)	200	4.082	0.954			
Treat low blood glucose with just the recommended amount of carbohydrate	48 (92%)	111	3.964	0.999		19 (37%)	
Carry quick acting sugar to treat low blood glucose	49 (94%)	181	3.694	1.610			
Come in for clinic appointments	48 (92%)	235	4.896	0.425			
Wear a Medic Alert ID	49 (94%)	120	2.449	1.745			
Exercise	50 (96%)	171	3.42	0.992			
If on insulin: adjust insulin dosage based on glucose values, food, and exercise	50 (96%)	56	3.294	1.490			32 (62%)

Non-Education Sample

Descriptive statistics were performed to determine sample characteristics and differences among the categories of gender, age, marital status, race, English reading and writing ability, presence of T2DM, presence of diabetic neuropathy, presence of chronic kidney disease, highest level of education, and family income. A predominately Caucasian (96.1%) male (67.3%) sample, a total of (*n* = 52) participated in the capstone. All (100%) participants had type T2DM,

and the majority (61.5%) of the sample was married. Two (3.8%) participants could not read and write English. Twenty-three (44.2%) participants had diabetic neuropathy, and four (7.6%) had chronic kidney disease. Education level ranged between grade school and master's level. Participant ages ranged from 30-80 with a mean age of 61 (*SD* = 12.5) years. Participants' annual incomes ranged from $5,000 to $85.000, and the average income was $23,800.

Table 3

Frequencies of Non-Education Sample

Descriptive Statistics		Frequency (%)
Gender	Male	35 (67.3)
	Female	16 (30.7)
	Missing	1 (1.9)
Marital Status	Married	32 (61.5)
	Single	4 (7.6)
	Divorced	6 (11.5)
	Widowed	8 (15.3)
	Separated	2 (3.8)
Race	African American	1 (1.9)
	Asian	1 (1.9)
	Caucasian	50 (96.1)
Read English		50 (96.1)
Write English		50 (96.1)
Highest level of education	Did not graduate high school	25 (48.0)
	High school graduate or equivalency	21 (40.3)
	Some college or college graduate	3 (5.7)
	Beauty School	1 (1.9)
	Business school	1 (1.9)
	Master's	1 (1.9)
Have T2DM		52 (100)
Presence of neuropathy	Yes	23 (44.2)
	No	29 (55.7)
Presence of Kidney disease	Yes	4 (7.6)
	No	48 (92.3)
Family income	5K-20K	31 (59.6)
	21K-50K	15 (28.8)
	51K-85K	4 (7.6)
	Missing	2 (3.8)

Measuring the non-education sample's perceived diabetes self-management practices, the non-education sample completed La Greca's SCI-R survey (Weinger, et al., 2005). Because no participant in the sample had type 1 diabetes, survey item three: *if type 1 check ketones when glucose is high* was eliminated.

Table 4

Survey Results of Non-Education Sample

Survey Item	*n*	Sum	*M*	*SD*	*n* = not taking diabetes pills or insulin	*n* = never had low blood glucose	*n* = not on insulin
Check blood glucose with monitor	52 (100%)	214	4.115	1.114			
Record blood glucose levels	52 (100%)	165	3.173	1.382			
Take the correct dose of diabetes pills or insulin	52 (100%)	236	4.720	0.757	2 (4%)		
Take diabetes pills or insulin at the right time	52 (100%)	226	4.520	0.735	2 (4%)		
Eat the correct food portions	52 (100%)	159	3.058	1.145			
Eat meals/snack on time	52 (100%)	159	3.058	1.227			
Keep food records	52 (100%)	76	1.462	1.056			
Read food labels	50 (96%)	156	3.120	1.480			
Treat low blood glucose with just the recommended amount of carbohydrate	46 (88%)	150	3.261	1.341			
Carry quick acting sugar to treat low blood glucose	52 (100%)	141	2.712	1.564			
Come in for clinic appointments	52 (100%)	249	4.788	0.498			

Survey Item	*n*	Sum	*M*	*SD*	*n* = not taking diabetes pills or insulin	*n* = never had low blood glucose	*n* = not on insulin
Wear a medic alert ID	52 (100%)	55	1.058	0.308			
Exercise	52 (100%)	158	3.038	1.120			
If on insulin: adjust insulin dosage based on glucose values, food, and exercise	52 (100%)	53	3.533	1.552			37 (71%)

Comparison of Education Sample with Non-Education Sample

To determine if there was a statistically significant difference between the education and non-education samples, a *t*-test was performed between each sample's mean scores of La Greca's SCI-R survey (Weinger, et al., 2005). No participant in either sample had type 1 diabetes. Therefore survey item three: *if type 1 check ketones when glucose is high* was eliminated. Within the education sample, 32 participants reported no insulin usage. In like manner, 37 non-education participants stated no insulin use. Consequently, survey item 15: *if on insulin: adjust insulin dosage based on glucose values, food, and exercise* was eliminated. With an established alpha of 0.05, it was concluded that there was not a statistically significant difference between the two samples. Because the author thought that the education sample would have a statistically significant higher score, a one-tailed *t*-test was utilized with unequal variance. The result revealed a *p* value of 0.059.

Table 5

Survey Results of Education Sample and Non-Education Sample

Survey Item	Education Sample *n*	Non-Education Sample *n*	Education Sample Sum	Non-Education Sample Sum	Education Sample *M*	Non-Education Sample *M*	Education Sample *SD*	Non Education Sample *SD*
Check Blood Glucose with monitor	50 (96%)	52 (100%)	208	214	4.160	4.115	0.912	1.114
Record blood glucose levels	49 (94%)	52 (100%)	192	165	3.918	3.173	1.222	1.382
Take the correct dose of diabetes pills or insulin	43 (83%)	50 (96%)	210	236	4.884	4.720	0.324	0.757
Take diabetes pills or insulin at the right time	44 (85%)	50 (96%)	208	226	4.727	4.520	0.451	0.735
Eat the correct food portions	50 (96%)	52 (100%)	190	159	3.8	3.058	0.670	1.145
Eat meals/snack on time	50 (96%)	52 (100%)	185	159	3.70	3.058	0.707	1.227
Keep food records	49 (94%)	52 (100%)	119	76	2.429	1.462	1.242	1.056
Read food labels	49 (94%)	50 (96%)	200	156	4.082	3.120	0.954	1.480
Treat low blood glucose with just the recommended amount of carbohydrate	29 (56%)	46 (88%)	111	150	3.964	3.261	0.999	1.341
Cary quick acting sugar to treat low blood glucose	49 (94%)	52 (100%)	181	141	3.694	2.712	1.610	1.564
Come in for clinic appointments	48 (92%)	52 (100%)	235	249	4.896	4.788	0.425	0.498
Wear a medic alert ID	49 (94%)	52 (100%)	120	55	2.449	1.058	1.745	0.308
Exercise	50 (96%)	52 (100%)	171	158	3.42	3.038	0.992	1.120

Lessons Learned

As previously discussed, the literature strongly supports DSME programs as means to reduce medical consequences, and costs of diabetes. Although the education sample's means were higher on each survey item than the non-education sample, there was not a statistically significant difference between the education sample and the non-education sample based upon an alpha of 0.05. It is important to discuss factors that could have contributed to the lack of statistical significance. First, the entire education sample graduated from the DSME program at different times. One participant graduated in 2009. Two graduated in 2010. Eight graduated in 2011. Fourteen graduated in 2012. Eighteen graduated in 2013. One graduated in 2014. Eight participants failed to report their graduation year. One is most empowered just after completing DSME. The passage of time can erode DSME participants' self-perception of self-management skills, and the result may have been different if the whole sample had recently graduated from the DSME program at the same time.

The diabetic patients who participated in the non-education sample were not newly diagnosed. Most of the non-education sample participants have had T2DM and have been the author's patients for years. Although the non-education sample has not attended DSME classes, that certainly does not imply a complete lack of education about the disease process and how diabetes is managed and controlled. Within the clinical setting, albeit informally, the author has provided individual education. Bias could have played a role in the data collection. As previously mentioned, the author recruited participants during patient encounters. Although the author instructed participants to answer the survey instrument questions honestly and objectively, the possibility remains that participants could have responded to survey questions in an attempt to please the author. Demographically, both samples were very similar in respect to race,

education level, marital status, and income. Larger sample sizes of both samples might have led to a statistically significant difference.

Recommendations

As previously stated, the purpose of this capstone project was to evaluate perceived self-management practices of type 2 adult diabetics with and without completion of a DSME program in south central Kentucky, and the results were shared with the diabetes educators. The LCDHD DSME educators are striving for excellence. The expectation is that DSME graduates would perceive themselves always practicing each element of self-diabetes management. At minimum DSME educators should anticipate program graduates to usually perform behaviors leading to glycemic control. Although the education sample scored higher than the non-education sample on the following survey items, these findings highlight areas that the LCDHD diabetes educators should more strongly emphasize.

A self-management strategy, exercising proper meal portion control aids diabetics to maintain glycemic control. In regard to portion control the education sample's mean was 3.8 while the non-education sample's mean was 3.058. The diabetes educators would be well advised to spend more time teaching DSME participants how to implement mealtime portion control. Representing another area that the educators could better reinforce, eating meals and snacks on time is another way diabetics control blood sugar. The education-sample's mean of eating meals and snacks on time was 3.70, and the non-education sample's mean was 3.058.

In diabetes education, it is important to teach the value of reading food labels. While scoring higher then the non-education sample, the education-sample's mean score of reading food labels was only 2.429 while the non-education sample's mean was 1.462. Because diabetics are prone to hypoglycemia, the DSME should more plainly stress the importance of

carrying quick acting sugar to treat low blood glucose. The education sample's mean score of carrying quick acting sugar to treat hypoglycemia was 3.694, and the non-education sample's mean was 2.712. In case of an emergency, diabetics are encouraged to wear medic alert identification bracelets. With respect to wearing a medic alert identification, as evidenced by the education-sample's mean score of 2.449, the DSME has not reinforced the point sufficiently. The non-education sample's mean score of wearing a medic alert bracelet was 1.058.

Physical exercise lowers blood glucose and should be performed daily. Despite the fact that the LCDHD diabetes educators teach the importance of exercise, the DSME participants are not engaged in physical activity enough, as their exercise mean was 3.42 while the non-education sample's mean was 3.038.

Maintaining and Sustaining Changes

In December 2014, the completed capstone project was shared with the diabetes educators who are the major stakeholders. The purpose of this practice-based project was to shape future strategies of the program. More specifically the capstone results informed the educators of the impact of their education in regard to the following criteria: checking and recording blood glucose; medication administration including oral and insulin; and eating correct food portions. In addition the results briefed the educators of their effect on: eating meals/snacks on time; keeping food records; reading food labels; treating low blood glucose; clinic appointments; exercise; and adjusting insulin based on glucose values, food, and exercise.

Based on the results, the educators were able to determine the strengths and weaknesses of the education. After examining these opportunities for improvement, revisions targeting the weaker areas of the existing educational program were made possible. To provide greater emphasis on addressing educational deficiencies, new teaching strategies may be developed.

The educators were encouraged to continue appraisal and measurement of the DSME program. The recommendation is to repeat the evaluation with a similar instrument every four years. The surveys can be mailed and/or emailed to the DSME participants.

Requiring additional funding, the capstone author will create a quarterly diabetes themed educational brochure for diabetic patients in the capstone author's clinical practice. It is fitting that DSME should occur in the capstone author's practice setting. The brochure's theme and content will change every three months for at least two years past the capstone author's graduation. The estimated labor costs to the capstone author are based on an hourly rate of $53.00. Thirty percent was added to the hourly rate to include benefits. The capstone author expects four hours of labor for the creation of each brochure. To sustain a new quarterly brochure for two years, the construction of eight unique brochures will be necessary. The capstone author's labor costs are $1,696. Considering all patients within the capstone author's clinical practice, 250 are identified as diabetics. To sustain the quarterly brochure distribution for two years past the author's graduation at 12 cents a color copy, the paper and copying costs are estimated to be $240. In addition, the author intends to make these brochures available to the LCDHD's DSME program.

Dissemination Plan

The author intends to disseminate the capstone project through a variety of avenues. On April 16, 2014, the author distributed abstracts and presented a capstone poster presentation during the University of Southern Indiana's Research, Evidence-Based Practice, and Performance Improvement in Healthcare Conference. In Decenber 2014, after capstone completion, final project reports were shared with the LCDHD DSME educators, the primary stakeholders. In April 2015, at the University of Southern Indiana's Research, Evidence-Based

Practice, and Performance Improvement in Healthcare Conference, the author will present the capstone project in a podium presentation. In April 2015, the goal is to submit capstone findings and recommendations to *The Diabetes Educator*. In summer 2015, the author will present a podium presentation to a regional gathering of the Kentucky Coalition of Nurse Practitioners and Nurse Midwives (KCNPNM). The author intends to share diabetes' calamitous repercussions, raise appreciation of DSME's efficacy, and endorse the LCDHD's DSME program. The author was selected to present a podium presentation at the 2015 American Association of Nurse Practitioners national conference on June 11, 2015.

Conclusion

Clearly, the prodigious evidence in support of DSME as a means to reduce morbidity and mortality coupled with the high medical and financial costs of diabetes necessitated the measurement of the LCDHD DSME program's effectiveness. Atak et al. (2008) maintain that the goals of DSME include: metabolic control, avoidance of complications, the enhancement of life quality by helping the patient to modify behaviors, and increase knowledge to guide change, resulting in positive attitudes and the efficacious management of diabetes. Diabetes educators build constructive performance adjustments in their participants, and their mediations have proven to be effective (Fitzner et al., 2008). Although not statistically significant, this capstone project has demonstrated that on each SCI-R item measured, the education sample's mean SCI-R scores were higher than those of the non-education sample.

Perceived self-management abilities among diabetic patients is key to disease management and on par with regular clinic visits. The 10 counties and society have shouldered the skyrocketing costs of diabetes for many years. DSME has demonstrated great promise to reduce diabetes financial public encumbrance. Hospital readmission rates for diabetic patients

who received no DSME at follow-up were 38.1 per person per 100 years (Robbins, Thatcher, Webb, and Valdmanis, 2008). Among poorly controlled inpatient diabetic patients, inpatient-DSME was correlated with 34% reduced odds of all-cause readmission by 30 days and 20% reduced odds of readmission by 180 days (Healy, Black, Harris, Lorenz, & Dungan, 2013). The cyclic nature of diabetes related illness, hospital admission, lack or ineffective diabetes education, early discharge, and rapid readmission comes into focus. No imagination is required to comprehend how the cyclic nature of diabetes increases the medical costs exponentially. The hospitalization readmission rate was 34% lower (25.0 per person per 100 years) among diabetic patients who at follow-up received just one DSME session (Robbins et al., 2008). Boren, Fitzner, Panhalkar, and Specker (2009) engaged in a literature review and discovered that 18 of 26 papers reported associations between DSME and decreased cost. The total mean diabetes related costs per patient per year were $918 lower after the first year of enrollment in DSME (Boren et al., 2009).

Engaging their diabetic patients in DSME behaviors, nursing leaders are at the forefront. Diabetics may face perceived barriers to action. It is a difficult task for many diabetics to surrender health-damaging behaviors such as eating sweets. Many diabetics perceive exercise, weight loss, and checking blood glucose as inconveniences. Nursing leaders are in a position to empower diabetic patients to overcome negative habits and to promote diabetes self-management behaviors. In conjunction with primary care providers, nursing leaders must reinforce these behaviors at each follow-up visit.

Perceived self-efficacy is the personal view of one's ability to carry out actions that lead to healthy change (Pender, 1996). For diabetics, these actions include healthy diet, exercise, weight loss, and checking glucose values. At follow-up visits, like diabetes educators, nursing

leaders foster self-efficacy when they reward their patients each time they choose the correct self-management behavior. Nurses are in the position to strengthen self-efficacy through positive feedback when patients successfully follow their diabetes plan. Central to DSME are commitment and strategy. Similar to diabetes educators' influence, nurses are in a position to motivate patients to adhere to gained knowledge and acquired skills. DSME is a constant process and does not end at the final session. In all settings, nursing leaders stand in the position to empower their diabetic patients to maintain glycemic control.

References

American Diabetes Association. (2013a). Economic costs of diabetes in the US in 2012. *Diabetes Care, 36*(4), 1033-1046. doi: 10.2337/dc12-2625

American Diabetes Association. (2013b). Executive summary: Standards of medical care in diabetes-2013. [Supplemental material]. *Diabetes Care, 36,* Supplement 1, 4-10. doi: 10.2337/dc13-S004

Atak, N., Gurkan, T., & Kose, K. (2008). The effect of education on knowledge, self management behaviours and self efficacy of patients with type 2 diabetes. *Australian Journal of Advanced Nursing*, *26*(2), 66-74. Retrieved from http://www.ajan.com.au/ajan_26.2.html

Boren, S.A., Fitzner, K.A., Panhalkar, P.S., & Specker, J. (2009). Costs and benefits associated with diabetes education: A review of the literature. *The Diabetes Educator, 31*(1), 72-96. doi: 10.1177/0145721708326774

Centers for Disease Control and Prevention. (2011). *National diabetes fact sheet: National estimates and general information on diabetes and prediabetes in the United States.* Retrieved from http:// http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf

Clarke, A. (2009). Effects of routine education on people newly diagnosed with type 2 diabetes. *European Diabetes Nursing*, *6*(3), 88-94. Retrieved from http://onlinelibrary.wiley.com/doi/10.1002/edn.142/abstract

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-159. Retrieved from http://classes.deonandan.com/hss4303/2010/cohen%201992%20sample%20size.pdf

Finkler, S.A., Jones, C.B., & Kovner, C.T. (2013) *Financial management for nurse managers and executives* (4th ed.). St. Louis, MO: Elsevier Saunders.

Fitzner, K., Greenwood, D., Payne, H., Thompson, J., Vukovijak, L., McCulloch, A., & Specker, J. E. (2008). An assessment of patient education and self-management in diabetes disease management-two case studies. *Population Health Management*, *11*, 329-340. doi: 10.1089/pop.2008.0012

Gill, J. K., Kumar, R., & Wiskin, C. M. (2008). Diabetes self-management study (DSS)-a demographic and clinical approach to patients' diabetes knowledge. *International Journal of Health Promotion & Education*, *46*(3), 100-106. Retrieved from http://cirrie.buffalo.edu/database/94286/

Healy, S.J., Black, D., Harris, C., Lorenz, A., & Dungan, K.M. (2013). Inpatient diabetes education is associated with less frequent hospital readmission amomg patients with poor glycemic control. *Diabetes Care, 36,* 2960-2967. doi: 10.2337/dc13-0108

Hicks, D. (2010). Self-management skills for people with type 2 diabetes. *Nursing Standard*, *25*(6), 48-56. Retrieved from http://nursingstandard.rcnpublishing.co.uk/archive/article-self-management-skills-for-people-with-type-2-diabetes

Higdon, J. & Topp, R. (2004). How to develop a budget for a research proposal. *Western Journal of Nursing Research, 26*(8), 922-929. doi: 10.1177/0193945904269291

Kentucky Diabetes Fact Sheet. (2011). Retrieved from http://quickfacts.census.gov/qfd/states/21/21231.html

Lake Cumberland District Health Department Home Page. (n.d.). Retrieved from www.lcdhd.org/diabetes/diabetes_classes/

Moriyama, M., Nakano, M., Kuroe, Y., Nin, K., Niitani, M., & Nakaya, T. (2009). Efficacy of a self-management education program for people with type 2 diabetes: Results of a 12 month trial . *Japan Journal of Nursing Science*, *6*, 51-63. doi: 10.1111/j.1742-7924.2009.00120.x

Nazarko, L. (2009). Causes and consequences of diabetes. *British Journal of Healthcare Assistants*, 3(11), 534-538. Retrieved from http://www.internurse.com/cgi-bin/go.pl/library/article.cgi?uid=45183;article=BJHA_3_11_534_538;format=pdf

New, N. (2009). Teaching so they hear: Using a co-created diabetes self-management education approach. *Journal of the American Academy of Nurse Practitioners*, *22*, 316-325. http://dx.doi.org/10.1111/j.1745-7599.2010.00514.x

Pender, N.J. (1996). *Health promotion in nursing practice* (3rd ed.). Stamford, CT: Appleton and Lange.

Pender, N.J., Murdaugh, C.L., & Parsons, M.A. (2011). *Health promotion in nursing practice* (6th ed.). Upper Saddle River, NJ: Pearson.

Robbins, J.M., Thatcher, G.E., Webb, D.A., & Valdmanis, V.G. (2008). Nutritionist visits, diabetes classes, and hospitalization rates and charges: The urban diabetes study. *Diabetes Care, 31*(4), 655-660. doi: 10.2337/dc07-1871

Sare, M.V. & L. Ogilvie. (2010). *Strategic planning for nurses change management in health care.* Sudbury, MA: Jones and Bartlett Publishers.

Schaffner, J. (2009). Roadmap for success: The 10-step nursing strategic plan. *The Journal of Nursing Administration, 39*(4), 152-155. doi: 10.1097/NNA.0b013e31819c9d28

Sigurdardottir, A. K. (2005). Self-care in diabetes: Model of factors affecting self-care. *Journal of Clinical Nursing*, *14*, 301-314. Retrieved from http://onlinelibrary.wiley.com/journal/10.1111/j.1365-2702.2004.01043.x/abstract

Siminerio, L. M., Ruppert, K., Emerson, S., Solano, F. X., & Piatt, G. A. (2008). Delivering diabetes self-management education (DSME) in primary care: The Pittsburg regional initiative for diabetes education (PRIDE). *Disease Management and Health Outcomes*, *16*(4), 267-272. Retrieved from http://adisonline.com/diseasemanagement/Abstract/2008/16040/Delivering_Diabetes_Self_Management_Education.7.aspx

Sousa, V. D., Zauszniewski, J. A., Musil, C. M., Price Lea, P. J., & Davis, S. A. (2005). Relationships among self-care agency, self-efficacy, self-care, and glycemic control. *Research and Theory for Nursing Practice: An International Journal*, *19*, 217-230. Retrieved from http://www.ingentaconnect.com/content/springer/rtnp/2005/00000019/0000003/art00003

Tol, A., Azam, K., Esmaeil Shahmirzadi, S., Shojaeizadeh, D., Mohebbi, B., Asfia, A., & Reza Khani, H. (2012). Relation between empowerment of diabetes control and adoption of self-management behaviors and its related factors among type 2 diabetic patients. *Razi Journal of Medical Sciences, 19*(98), 11-18.

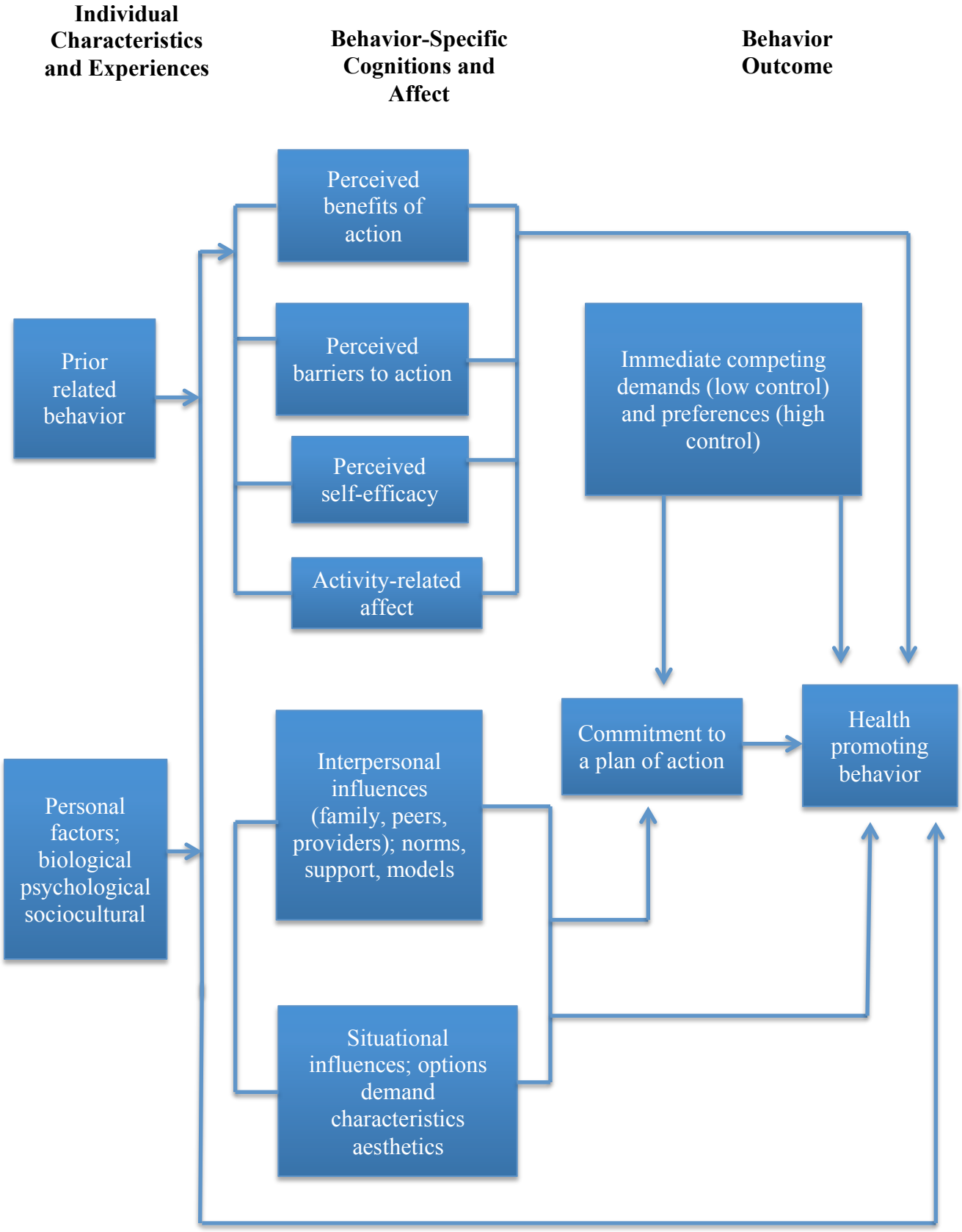
United States Census Bureau State & County Quick Facts. (2011). Retrieved from http://quickfacts.census.gov/qfd/states/21/21231.html

Weinger, K., Butler, H. A., Welch, G. W., & La Greca, A. M. (2005). Measuring diabetes self-care: A psychometric analysis of the self-care inventory-revised with adults. *Diabetes Care*, *28*(6),1346-1352. Retrieved from http://care.diabetesjournals.org/content/28/6.toc

Wu, S.V., Lee, M., Liang, S., Lu, Y., Wang, T., & Tung, H. (2011). Effectiveness of a self-efficacy program for persons with diabetes: A randomized controlled trial. *Nursing and Health Sciences, 13*(3), 335-343. doi: 10.1111/j.1442-2018.2011.00625.x

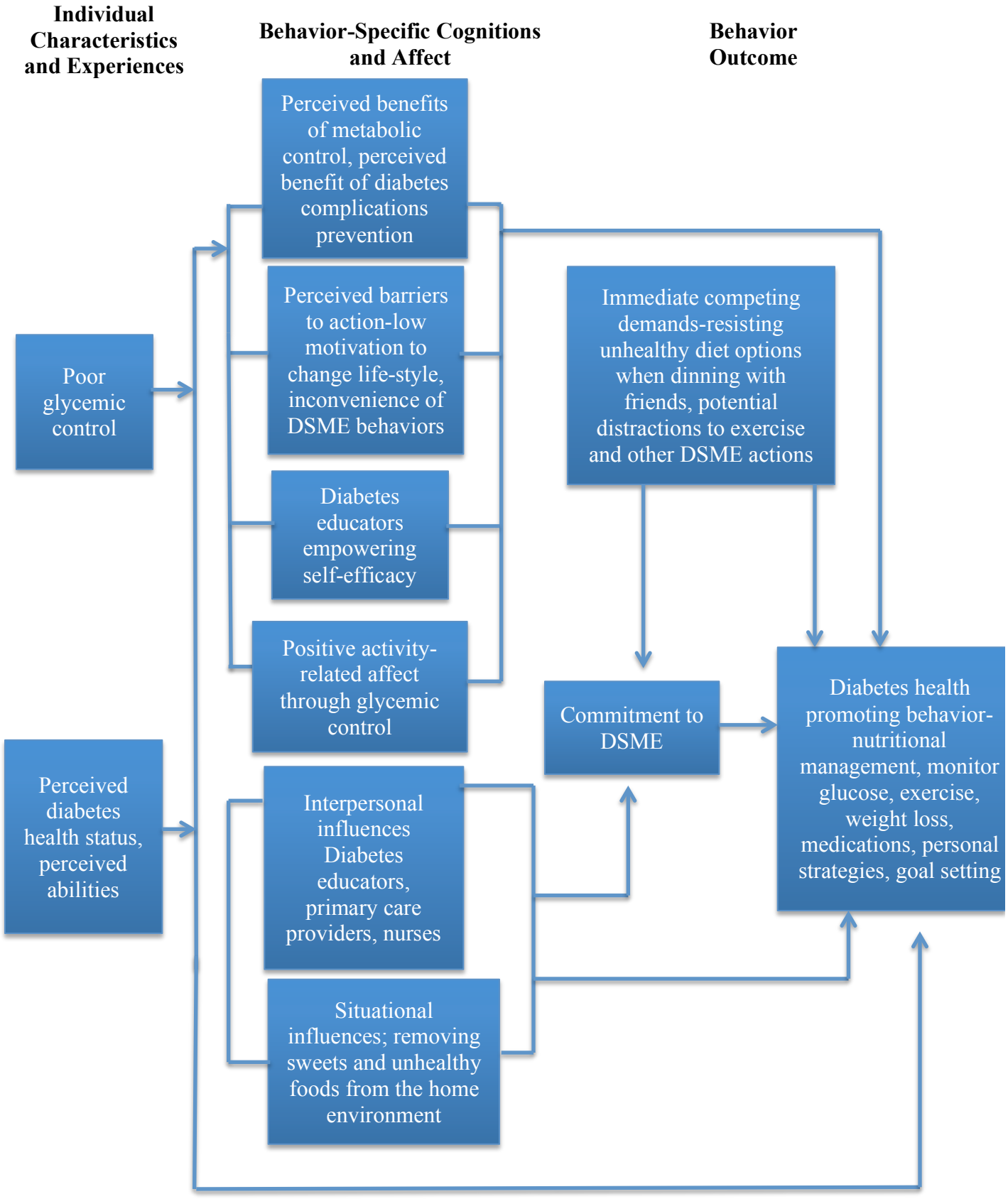
Appendix A

Pender's Health Promotion Model



Appendix B

Pender's Health Promotion Model Integration with DSME



Appendix C

Taylor Regional Hospital Permission Letter

Taylor Regional Hospital
Jewish Hospital Health Network

1700 Old Lebanon Road
Campbellsville
Kentucky 42718
(270) 465-3561
Fax (270) 465-3465

April 21, 2013

Dennis Wooley, ARNP
Via Electronic Mail

Re: Permission to proceed with study

Mr. Wooley,

This letter follows our conversation wherein we discussed the study you wish to carry out at Taylor Rural Health. Our understanding is that this study is part of your pursuit of higher education. We have reviewed the Participant Informed Consent Document you provided along with the Self Care Inventory-Revised Version. We may proceed with this study at our facility. Please inform us if there are changes in your process.

Please do not hesitate to contact me if you have questions.

Sincerely,

Ramona Hieneman
Director of Corporate Responsibility

Appendix D

Lake Cumberland District Health Department Permission Letter

"Blackburn, Bob (CHFS Ombudsman)" <Bob.Blackburn@ky.gov> September 20, 2013 2:07 PM
To: Wooley Dennis <dwooley05@gmail.com>
RE: University of Southern Indiana's IRB approval letter

Mr. Wooley,

The Cabinet for Health and Family Services Institutional Review Board (CHFS IRB) will rely upon the approval of the University of Southern Indiana's IRB, and you do not have to submit a separate request to the CHFS IRB for approval. Bob

Bob Blackburn
CHFS IRB Administrator
Office of the Ombudsman
275 East Main Street 1E-B
Frankfort, Kentucky 40621
Phone: (502) 564-5497 x3711
Fax: (502) 564-9523
E-mail: bob.blackburn@ky.gov

From: Wooley Dennis [mailto:dwooley05@gmail.com]
Sent: Thursday, September 19, 2013 11:03 PM
To: Blackburn, Bob (CHFS Ombudsman)
Subject: University of Southern Indiana's IRB approval letter

Mr. Blackburn,

This is Dennis Wooley. You may recall that I'm a doctoral student at the University of Southern Indiana, and we spoke on the phone last March about my study measuring the LCDHD's diabetes education program. You sent me an email stating that when the University of Southern Indiana's IRB approves my study that no further IRB approval would be necessary, that we would just rely on the university IRB approval. You also requested a copy of the approval letter, and I have one attached. For your review, I also attached your email. Do I have the green light to begin data collection? If so would you send me an email stating so?

Thanks,

Dennis Wooley

Appendix E

Participant Letter

Measuring the Perceived Self-Management Practices of Adult Type 2 Diabetics after Completion of a Rural Diabetes Self-Management Education Program

Date:

Dear Participant:

As a graduate of the diabetes self-management program offered through the Lake Cumberland District Health Department, you are being invited to answer the attached survey questionnaire about your perceived ability to self-manage diabetes. There are no risks for your participation in this capstone project. However, there is substantial potential benefit. The information you provide may help the educators identify methods to improve the diabetes self-management education. Your completed questionnaire will be stored in a lock box at the capstone author's residence.

The capstone author, individuals from the University of Southern Indiana, and a statistician may inspect these records. In all other respects the data will be held in confidence to the extent permitted by law. Should the data be published, your identity will not be disclosed.

Please remember that your participation in this project is voluntary. If you agree to participate, please complete the brief questionnaire, sign the consent form, and return the signed consent form and the questionnaire in the pre-addressed stamped envelope. Your returned envelope indicates that all your questions have been answered in language you can understand. You may refuse to participate without being subject to any penalty.

If you have any questions about the capstone project, please feel free to call Dennis Wooley at (270) 250-2093.

Sincerely,

Dennis S. Wooley, APRN, MSN

Appendix F

Informed Consent

UNIVERSITY OF SOUTHERN INDIANA

Measuring the Perceived Self-Management Practices of Adult Type 2 Diabetics after Completion of a Rural Diabetes Self-Management Education Program

Participant Informed Consent Document

Dennis Wooley is conducting this project under the supervision of Dr. Tracy Kinner. Dennis Wooley can be reached by 100 Rolling Lane, Columbia, KY 42728, or dwooley05@gmail.com or 270-384-1110 (office) or 270-250-2093 (cell). Please ask any questions you have about the study before signing this document.

PURPOSE: The purpose of this project is to measure the perceived self-management practices of type 2 adult diabetics after completion of a rural diabetes self-management education program in south central Kentucky.

PROCEDURES: You will be asked to fill out a questionnaire evaluating your perceived ability to self-manage type 2 diabetes.

TIME COMMITMENT: Your participation will take no more than five to ten minutes filling out the questionnaire.

RISKS AND BENEFITS: There is no risk involved in filling out the questionnaire. The benefit is an increased awareness of your perceived ability to manage type 2 diabetes, and the information you supply may help the diabetes educators to better develop teaching methods and strategies.

CONFIDENTIALITY: Your personal information will not be made public. Your individual privacy will be maintained in all published and written data resulting from the study. For the duration of the study and for two years post study, the researcher will keep the study records in a locked box located in his home office. After the study has been completed for two years, the researcher will destroy all study records. Dennis Wooley will answer any questions that you have about the study.

COMPENSATION: None

VOLUNTEERING FOR THE STUDY: Your participation is voluntary. You are free to stop taking part at any time without penalty.

SUBJECT STATEMENT: I have read the explanation provided to me. I have had all my questions answered. Based on the above statements, I agree to take part in this study.

Participant's Signature_____Date_____

Researcher's Signature_____Date_____

Appendix G

Demographics

Measuring the Perceived Self-Management Practices of Adult Type 2 Diabetics after Completion of a Rural Diabetes Self-Management Education Program

Gender: (circle one) Male Female

Age: _____

Marital Status: (circle one)

Single Married Divorced Widowed Separated

Race: (circle one)

African American Asian White Hispanic Native American Pacific Islander

Can you read English? Yes No

Can you write English? Yes No

What is the highest level of education you have received? _____

Do you have type 2 of diabetes? Yes No

When did you graduate from the diabetes education program?

Month_____ Day_____ Year_____

Do you have a medical diagnosis of numbness or stinging of your feet or legs?
Yes No

Do you have a medical diagnosis of kidney disease? Yes No

What is your annual family income? _____

Appendix H

Self Care Inventory-Revised Version (SCI-R)
This survey measures what you *actually do,* not what you are advised to do. How have you followed your diabetes treatment plan in the past 1-2 months? Please circle the number that describes you.

	Never	Rarely	Sometimes	Usually	Always	
1. Check blood glucose with monitor	1	2	3	4	5	
2. Record blood glucose levels	1	2	3	4	5	
3. If type 1: Check ketones when glucose level is high	1	2	3	4	5	Have type 2 diabetes
4. Take the correct dose of diabetes pills or insulin	1	2	3	4	5	Not taking diabetes pills or insulin
5. Take diabetes pills or insulin at the right time	1	2	3	4	5	Not taking diabetes pills or insulin
6. Eat the correct food portions	1	2	3	4	5	
7. Eat meals/snacks on time	1	2	3	4	5	
8. Keep food records	1	2	3	4	5	
9. Read food labels	1	2	3	4	5	
10. Treat low blood glucose with just the recommended amount of carbohydrate	1	2	3	4	5	Never had low blood glucose
11. Carry quick acting sugar to treat low blood glucose	1	2	3	4	5	
12. Come in for clinic appointments	1	2	3	4	5	
13. Wear a Medic Alert ID	1	2	3	4	5	
14. Exercise	1	2	3	4	5	
15. If on insulin: Adjust insulin dosage based on glucose values, food, and exercise	1	2	3	4	5	Not on insulin

Appendix I

Permission Letter to use SCI-R

From: "Annette M. La Greca" <alagreca@miami.edu>
Subject: Re: SCI-R
Date: January 23, 2013 10:46:10 AM EST
To: "Reyes, Elizabeth" <ereyes@miami.edu>, <dwooley05@gmail.com>

Dear Dennis:

I apologize for the delay but I've been out of town since the 16th with limited email.

Thank you for your interest in the SCI.

I hold the copyright to the scales, and only give you permission for use if you agree that you will NOT publish norms, translations, or alterations of the scale without my express permission or collaboration. Please send a note of agreement /

The brief manual for the measure, that contains the items and their scoring, is on my faculty website: www.psy.miami.edu/faculty/alagreca

Annette M. La Greca, Ph.D., ABPP
Professor of Psychology and Pediatrics
Department of Psychology
University of Miami
Coral Gables, FL 33124

Appendix J

Project Task Timeline

Tasks	Timeline
Met diabetes self-management education program coordinator	August 2012
Obtained permission to use instrument	January 2013
Completed capstone proposal	April 2013
Obtained IRB approval	September 2013 October 2013
Began data collection	October 2013
Completed data collection	May 2014
Began data analysis	January 2014
Completed data analysis	May 2014
Completed final written capstone report	November 2014
Completed dissemination of capstone project	April 2015

Appendix K

Marketing Plan

Target/Stakeholder	Message	Vehicle/location	Timeline	Cost
Diabetes Education Coordinator	Recruit participation to mail packets including cover letter survey instrument, demographics survey, and informed consent to DSME program graduates	Emails and phone calls	September 2013	See Budget
LCDHD DSME Program graduates	Packets including cover letter survey instrument, demographics survey, and informed consent	Mailings	October 2013	See Budget

Non DSME Participants from author's clinic	Verbal explanation of project, instrument, demographics survey, and informed consent	Direct personal one-on-one contact with author's diabetic patients	May 2014	See Budget

Appendix L

Budget

Expenses			
Item	**Total Amount**	**LCDHD's In Kind Donation**	**Capstone Author's Direct Cost Amount**
$37/hour x diabetes education coordinator's four hours mailing time	$148.00	$148.00	
Postage x 515 mailings x $0.46 to DSME graduates including sent and pre-stamped envelopes for return to capstone author	$469.20	$161.00	$308.20
1,030 Envelopes x $0.04 including outside sent to DSME graduates and return pre-addressed envelopes to be returned to capstone author	$41.20	$14.20	$27.00
515 address labels x $00.6 sent together with 515 return address labels x $0.06	$61.80	$30.90	$30.90
515 Cover letters x $0.07, 567 x $0.077 and 567 survey instruments and demographics 1 page front and back x $0.12 cents	$143.78		$143.78

Copy fee for four project proposal copies x $0.15 per page	$18.00		$18.00
Copy fee for four project final report copies x $0.15 per page and binding fee of $6.00 per report	$66.00		$66.00
Capstone author's salary $53.00/hour x 12 hours preparing mailings to DSME graduates and time spent surveying non-education participants in author's clinic	$636.00		$636.00
Dissemination at a national conference-Conference fee	$600.00		$600.00
Air-fair to national conference	$600.00		$600.00
Ground transportation at national conference	$80.00		$80.00
Hotel fee at national conference	$500.00		$500.00
Meals at national conference not included in conference	$200.00		$200.00
Total			$3,563.98

Appendix M
Evaluation Plan

Objective	**Measures**	**Expected Outcome (Indicator)**	**Data Source**	**Timeline**
Completion of data collection for the graduates from the LCDHD DSME program by December 2013	La Greca's (2004) Self-Care Inventory-Revised Version (SCI-R) Statistical tests	Raw collection of descriptive statistics and measurement of participants' perceived diabetics self-management practices	LCDHD DSME graduates	Completed December 2013
Completion of data collection for non-education participants	La Greca's (2004) Self-Care Inventory-Revised Version (SCI-R) Statistical tests	Raw collection of descriptive statistics and measurement of participants' perceived diabetics self-management practices	Non DSME participants	Completed May 2014
Completion of data analysis of the graduates from the LCDHD DSME program by May 2014	La Greca's (2004) Self-Care Inventory-Revised Version (SCI-R) Tool Evaluated	Final report of data analysis findings	LCDHD DSME Data analysis from the SCI-R	Completed May 2014

Completion of data analysis of non-education participants by May 2014	La Greca's (2004) Self-Care Inventory-Revised Version (SCI-R) Tool Evaluated	Final report of data analysis findings	Author's diabetic patients Data analysis from the SCI-R	Completed May 2014
Share completed capstone project with LCDHD diabetes educators by December 2014	Completed capstone project	Stakeholders taking possession of completed capstone project and discussing project findings with capstone author	LCDHD Diabetes educators	Completed December 2014

Appendix N

University of Southern Indiana IRB Approval

University of Southern Indiana
Office of Sponsored Projects and Research Administration
8600 University Boulevard * Evansville, Indiana 47712 * 812/465-1126
www.usi.edu/ospra - rcr@usi.edu

DATE:	September 19, 2013
TO:	Dennis Wooley
FROM:	USI Office of Sponsored Projects and Research Administration
PROJECT TITLE:	[506509-1] Measuring the Perceived Self-Management Practices of Adult Type 2 Diabetes after Completion of a Rural Diabetes Self-Management Education Program
REFERENCE #:	2014-33-CNHP
ACTION:	APPROVED
IRB APPROVAL DATE:	September 19, 2013
REVIEW CATEGORY:	TYPE 2 RESEARCH - Expedited category # *5*

The above project has been approved by USI's IRB under the provision of Federal Regulations 45 CFR 46.

This approval is based on the following conditions:

1. The materials you submitted to the IRB (through the Sponsored Research Office) provide a complete and accurate account of how human subjects are involved in your project.
2. You will carry on your research strictly according to the procedures as described in the materials presented to the IRB.
3. You will report to the Sponsored Research Office any changes in procedures that may have a bearing on this approval and require another IRB review.
4. If any changes are made, you will submit the modified project for IRB review.
5. You will immediately report to the Office of Sponsored Projects and Research Administration any problems or adverse events encountered while using human subjects.

This project requires continuing IRB review on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of September 19, 2014.

Please contact our office before submitting a modification or renewal form so we can unlock your original package.

If you have any questions, please contact us at 812-228-5149 or rcr@usi.edu.

Please include your project title and reference number in all correspondence with this committee.

Appendix O

University of Southern Indiana IRB Approval of Data Collection Protocol Revisions

University of Southern Indiana
Office of Sponsored Projects and Research Administration
8600 University Boulevard * Evansville, Indiana 47712 * 812/465-1126
www.usi.edu/ospra - rcr@usi.edu

DATE:	October 10, 2013
TO:	Dennis Wooley
FROM:	USI Office of Sponsored Projects and Research Administration
PROJECT TITLE:	[506509-1] Measuring the Perceived Self-Management Practices of Adult Type 2 Diabetes after Completion of a Rural Diabetes Self-Management Education Program
REFERENCE #:	2014-33-CNHP
ACTION:	APPROVED
IRB APPROVAL DATE:	October 10, 2013
REVIEW CATEGORY:	TYPE 2 RESEARCH - Expedited category # *5*

The above project has been approved by USI's IRB under the provision of Federal Regulations 45 CFR 46.

This approval is based on the following conditions:

1. The materials you submitted to the IRB (through the Sponsored Research Office) provide a complete and accurate account of how human subjects are involved in your project.
2. You will carry on your research strictly according to the procedures as described in the materials presented to the IRB.
3. You will report to the Sponsored Research Office any changes in procedures that may have a bearing on this approval and require another IRB review.
4. If any changes are made, you will submit the modified project for IRB review.
5. You will immediately report to the Office of Sponsored Projects and Research Administration any problems or adverse events encountered while using human subjects.

This project requires continuing IRB review on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of October 10, 2014.

Please contact our office before submitting a modification or renewal form so we can unlock your original package.

If you have any questions, please contact us at 812-228-5149 or rcr@usi.edu.

Please include your project title and reference number in all correspondence with this committee.