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Running Head: LIFESTYLE COACHING FOR DIABETICS

MANAGEMENT OF TYPE 2 DIABETES WITH LIFESTYLE COACHING IN LOW
INCOME INDIVIDUALS

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Capstone

A Paper Presented to Meet Partial Requirements

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School of Nursing

Chapter 1

Diabetes Epidemic

The World Health Organization (WHO) has estimated that 347 million people worldwide have been diagnosed with diabetes. Diabetes Type 2 (previously known as non-insulin-dependent diabetes or adult onset diabetes) is a disease that comprises 90% of diabetics around the world, and it can be prevented by leading a healthy lifestyle such as: maintaining a healthy body weight, eating a healthy diet, avoiding tobacco, and participating in regular physical activity (World Health Organization [WHO], 2013). According to the 2011 American Diabetes Association statistics, 25.8 million (8.3%) of the American population including children have diabetes with only 18.8 million people diagnosed, an additional 79 million people have been diagnosed with pre-diabetes (American Diabetes Association [ADA], 2013).

Approximately 80% of the population with Type 2 is obese which in combination leads to even more life-threatening conditions such as: hypertension, cardiovascular disease, end stage renal disease, blindness, dyslipidemia, depression, peripheral neuropathy, and strokes. Therefore, it is very crucial to maintain a healthy lifestyle and prevent the co-morbidities associated with the effects of Type 2 diabetes.

Diabetes Mellitus (DM) is mostly diagnosed after the age of 40; however, with the increase in childhood and adolescent obesity it has also led to a rise in Type 2 diabetes in the younger population (Schub & Spears, 2013).

According to national standards for diabetes a patient with a first time diagnosis of diabetes should receive diabetes self-management education (DSME) and education needed thereafter. The education needed during the DSME includes education on nutrition, physical activity, weight management, foot care and a recommended community resource program. An

integration of self-management education, adequate self-management support and support resources are required for sufficient routine care (Riethof, 2012).

In a continuation of sufficient routine care a Shared Decision-Making Model helps provide a supportive framework for the patient to advantageously utilize the education provided in treating their diabetes. The Shared Decision-Making Model provides decisional conflict; decision support and decision aids to better utilize a Collaborative Conversation. A Collective Conversation is used to nurture relationships, enhance patients' knowledge, skills and confidence in the management of their health by using an inter-professional approach. The patient's values and preferences are the key to a successful decision making process.

The purpose of this research is to examine effects and results of a proactive and responsive approach by way of healthy lifestyle coaching and preventive actions for Type 2 diabetics versus those that make unhealthy lifestyle choices that could potentially lead to comorbidities. The researcher addressed the question: with Type 2 diabetics, would a healthy lifestyle coaching result in lowering the Hemoglobin A1C compared to patients without a lifestyle-coaching group?

Theoretical framework

Creation Health. Although there are many theoretical frameworks for a healthier lifestyle, The Creation Health Model brings eight universal principles of whole person health into focus on how to live life to the fullest, just as God had intended people do since the beginning of time. This faith-based wellness program is backed by evidence-based science and Biblical principles that are supported by a health care institution with a global mission. The word CREATION is used as an acronym that can be linked to creating a healthier self-diabetic plan: 1) Choice-The choice to exercise at least 30 minutes every day would help decrease blood sugar

levels and improve general health; 2) Rest-Taking time out to relax, de-stress and have adequate amount of sleep; 3) Environment- Surrounding self with a safe atmosphere; 4) Activity- Exercising body, mind and spirit; 5) Trust-Having faith in the effort put in leading to a healthier life; 6) Interpersonal Relationships-Social connection within the diabetes group strengthens the well-being and improves health; 7) Outlook-Positive mindset will lead to positive impact on health; 8) Nutrition- A well balanced diet leads to the optimal healthy body wholeness (Creation, 2012).

These principles provided by the Advanced Practice Nurse (APN) coordinate a holistic approach of thought for the patient. The principles not only provide diabetes education and management, they get the patient to assess their negative life habits, such as poor nutrition, not exercising, and not taking care of mental stressors. While the Creation Model makes them aware of the negatives, it also makes them think of solutions to the problem. Additionally the framework lends itself well to use in coaching sessions as the APN health coach can address specific aspects of the model as they related to DM. And each element of the creation model is very relevant to DM and DM control (Creation, 2012).

Health Coaching. The theory of integral nursing, founded by Author Barbara Dossey, has insightful pertinence regarding integrative nurse coaching. It is applicable to diverse ethnic, multicultural, religious, and socio-economic type settings and communities. In figure 1, the steps of the integral model are noted.

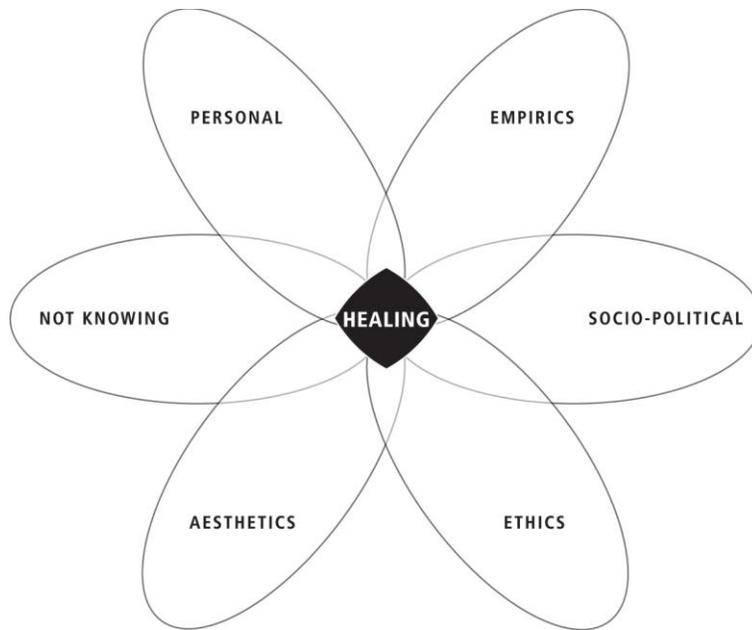


Figure 1. Healing and Patterns of Knowing in Nursing (Personal, Aesthetics, Empirics, Ethics, Not Knowing, Socio-Political). Adapted from Carper BA. Fundamental patterns of knowing in nursing. *Adv Nurse Sci* 1978;1:13–24.

In the steps of the integral coaching model there are, “The Six Patterns of Knowing”. In this study they are identified as: 1). Personal-Connecting with the patient’s inner sense of wholeness; 2) Empirics-gathering evidence-based measurements and labs such as, weight, blood pressure and A1C; 3) Aesthetics- discussion of knowledge of diabetes and personal experiences involved; 4) Ethics- Valuing their health enough to make a decision to change; 5) Not knowing- Having an open mind to the information provided to better their self being; 6) Socio-political knowing- The provider discusses the patient’s own goals and what step to do next. This integral nursing model demonstrates a way patients need to make a change within for it to be perpetuated externally and therefore a health change can occur to the mind, body and soul (Schaub, Luck, Dossey, 2012).

Research Questions.

This Research investigated the question: (P) At Volunteers in Medicine located in Chattanooga, TN, in a coaching group with diagnoses of diabetes and an impaired fasting glucose, (I) would a six week, lifestyle coaching group combining patient health coaching, education and group support decrease their A1C and fasting glucose levels amongst low income diabetics (C) compared to diabetic patients not participating in a coaching group (O) based on their knowledge of diabetes, glucose monitoring, glucose control, quality of care and self-motivation over a two month period.

Chapter 2

To fulfill the literature review, a thorough search was utilized through Southern Adventist University's online McKee library; databases included PubMed, CINAHL Complete, and Google Scholar. Pertinent keywords used in search of the articles included diabetes, diabetes coaching, coaching and diabetes, diabetes education, and low income diabetic patients. Each article's reference list was also screened to identify any potentially relevant information.

The criteria used for the selection of the literature reviews included (1) Diabetes coaching as the main subject of the study, (2) diabetic coaching in low income individuals, and (3) diabetes challenges.

Using keywords and eligibility criteria for article searches, 6 studies were selected with three themes evaluated for the intention of the review of literature.

Goals of Diabetes Coaching, Education and its Challenges

Peer and group coaching can lead to potential benefits for both clinicians and patients. The potential benefits include; fewer emergency department visits, fewer complications from poorly controlled diabetes, more time for clinicians to assist patients with self-management, and a decreased amount of no-show appointments. An integral part of the management of diabetes is the self-care that each individual patient needs to become experienced in to change the day-to-day management of diabetes. Newly diagnosed diabetic patients require education regarding management and focus of care by a healthcare professional until adequate knowledge and experience is obtained to manage one's own glucose control.

Literature Review

Hayes, McCahon, Panahi, Hamre & Pohlman, (2008) showed that the most common strategy to facilitate diabetes self-management which has been noted to improve glycemic

control is intensive patient education provided to the patient. Coaching is a new method which assists patients with taking actions and making changes to reach new goals in terms of their conditions. Coaching is thought to be based on strong communication from providers, negotiation skills, patient-defined goals, conscious patient choices, exploration of outcomes of decisions (by patients), and the acceptance of accountability for decisions made by patients. Good patient-provider communication is one of the key aspects to help raise patient awareness and a need to change habits. Implementing coaching as a main focus to help patients reach goals and make changes is a holistic method that may lead to change and improvement of their long term condition.

Diabetes is a lifelong disease with lifelong medical monitoring being necessary to avoid morbidity and mortality at a younger age, therefore, adequate lifestyle changes are advised for a more enduring life. Diabetes education is a vital component in the patient's empowerment to be successful in the treatment and management of their diabetes. Coaching is a way the patients can identify and enhance their knowledge and confidence using the right tools and skills to reach their diabetes health goals and prevent certain diabetic health complications. For a patient trying to manage their diabetes independently and prevent major health risks, coaching provides a way for the patient to use a combination of clinical skills and psychological interventions to raise their awareness, responsibility, self-care, confidence and motivation to achieve their goals and enhance their health (Newman, Varnan, McDowell, 2013).

Newman, Varnan, McDowell (2013) studied 200 patients to determine the effects of coaching on chronic conditions including a reduction in HbA1C. The purpose of this study was to examine the conversations between clinicians and patients, and to help patients reach their own personal goals regarding their medical condition. The study suggests that a patient with a

long term medical condition only encounters with health professionals for three hours annually. This means that 8757 hours are left for the patients to independently engage in self-care. During the study, patients engaged in over 360 coaching appointments., A four-day accredited training course in health coaching was provided for 13 practice nurses from rural and urban areas to help assist diabetic patients into self-care by identifying their own health goals. The patients were mostly selected through ad hoc referral and self-selection process. A quantitative study model was used to conduct this study. Risk stratification tool was used for the research as well as a self-efficacy scale that found strong evidence in patient's confidence, reducing emotional distress, management of condition beyond taking medication and an increase of participant's level of self-care.

During the evaluation process pre and post patient self-efficacy questionnaires and qualitative feedback from patients as well as nurses were examined. Quantitative measures showed that 98% of patients were satisfied or more than satisfied with their coaching experience, while 74% reported a better understanding of their condition. The study continued to show that patients had 61% understanding of their test results and the treatments they were undergoing. The study showed increase of patient self-efficacy from 6.6 mean to 8.3 mean as a result of the coaching appointments. The goal of this study was to improve the self-efficacy of patients regarding their medical conditions. The focus of this study was primarily a psychosocial view, due to the patients' results of self-efficacy, while this is important, the question remains as to whether or not this translates into better disease management and control, and ultimately reduced morbidity (Newman, Varnan, McDoweell, 2013).

Along with improving the quality of life and reducing or preventing the onset of microvascular and neuropathic complications, the correct type of diabetic coaching and

education can also have a great impact on the staggering costs of diabetes related complications. This study suggests that new and innovative approaches are needed in order to meet the needs of patients who are suffering from lifelong conditions. Innovations such as self-coaching by practice nurses has been shown as an effective way to encourage and support self-management of patients who suffer from long term conditions.

Coaching will provide the client with full control of the topics of conversation including any issues the client prefers to bring up as long as it is within the span of coaching. An article entitled “Wellness solutions include health coaching” (2012), notes a health coaching program reduced a patient’s hemoglobin A1c by one point, reduced their body mass index (BMI) by an average of 0.8, and reduced their LDL cholesterol level by an average of 10 points within a year. Research from this group was conducted by Advocate Health Care, which is an integrated health care system based in Illinois. This group has further expanded and offers coaching to family members, employees, spouses, along with their patients. The coaching program was piloted first in 2006 which immediately yielded positive results, including the reduced LDL and A1c levels. The coaching group provides not only education about diabetes but it allows the patient to show a readiness to change. The program included coaches who were physicians, nurses, medical staff, and care managers, who were all trained in motivational interviewing, which helped identify if the patients were ready to change. Patients do make their own choices and are included in the decision-making process. Once the patient sets a goal, the coach guides the individual to make realistic smaller goals to be able to see a difference and accomplish the long term major goal with their health. The coaches created a balanced approach with their patients by identifying their readiness to change by using motivational interviewing techniques. Personal goals were identified during the initial phone calls which included smoking cessation, weight loss, diabetes

management, and other behavioral changes (increasing physical activities, managing stress and improving nutritional habits). This was an important part of this program; helping patients identify their own goals without imposing on them. The coaching in this study suggested that certain aspects of the patient's self-efficacy was improved as well as their overall health status (based on the decrease in LDL and A1c).

Thom (2013) performed a randomized controlled trial that described peer coaching trends resulting in improvement in glycemic control by having a one-on-one self-management support system. The researchers of this study randomly selected 25 patients with a HbA1c of less than 8.5% for peer coaching in a classroom setting. Patients participated in this coaching for 36 hours and were selected to act as peer coaches to a peer coaching group.

Another randomized selection of patients was chosen with HbA1c levels less than 8.0% for coaching or usual care. After 6 months, this study found that HbA1c levels decreased in the peer coaching group by 1.07%, whereas HbA1c only decreased by 0.3% in the usual care group. The difference of 0.77% in favor for the coaching group was significant ($P = .01$ adjusted). Peer coaching classes significantly improved the control of this long term condition in this group of patients. A linear mixed model was used for data analysis with and without adjustment for differences in baseline variables (Thom, 2013).

Another way that has been studied and noted to be helpful was to provide peer support and motivation along with a cost-effective option on peer involvement and management of their disease (Cooper & Kar, 2014). With the help of social media sites like twitter and personal blogs, type 1 diabetics were able to gain from personal and professional experiences of others with type 1 diabetes, such as nurses and physicians. MacLean (2012) implemented a low-cost method to engage patients in self-management of diabetes through use of a telephone coaching system.

Such coaching modalities have been shown to have a positive impact on participant's behavior and attitude towards self-managing their diabetes.

The MacLean (2012) study was conducted through a community diabetes education program by the name of "On The Road to Living Well with Diabetes (OTR)," specifically focused to assist patients with long term diabetes care. Fifty patients were enrolled into the program and coached via telephone. The coaches focused on individual patient's personal goals rather than researcher set goals. The coaches were trained to involve patients in conversations that would aid in reaching their goals and overcoming specific barriers. The coaching group results were compared to a control group that included participants from the prior year without the telephone coaching. Throughout the 8 week length of the study, A1C levels were decreased by 1.3 % for patients participating in a coaching group compared to only 0.5% for patients participating in a control group. The study suggests that OTR classes as well as coaching have a positive impact on A1C levels, but telephone coaching has a higher impact.

Diabetics make daily lifestyle choices regarding their diabetes management and with the help of diabetic educators, the patients will learn about the complexities of management and the side effects of therapy. The structured education of diabetes management is very important to newly diagnosed diabetics as well as the ongoing process of evolving diabetes education for a lifetime. A structured curriculum focused on patient-centered philosophy supports self-management, attitudes, beliefs, skills, knowledge, and reinforcement education to individuals. This leads to a better metabolic outcome and a better quality of life for the diabetic individuals. This empowers the patient's confidence to carry out different behaviors, and includes learning from problem solving and from the experiences of others. Educators measure the success and key outcomes of the education provided with the patient's biomedical results (HbA1c, weight,

and lipid profile), satisfaction of care, quality of life, experience of education, degree of self-management achieved due to the program experience. The educator's results are helpful to the future coaching and education of diabetic individuals. With diabetes being on the rise tremendously, the education behind maintaining a healthy lifestyle with this condition increased likewise. The study named "Diabetes and You" developed for patients over the course of 4-weeks (one time per week), to help newly diagnosed patients learn about this chronic condition. A structured curriculum was implemented; a patient-centered philosophy was adopted, which helped patients with self-management, attitudes, knowledge, beliefs, and overall skills. According to the authors of this article, trained educators are another very crucial aspect to this program. Assessing aspects such as biomedical values (weight, A1C, lipid profile), quality of life, satisfaction of care, user involvement, and so forth are all values of the program which are being audited. Although there is a limit to what can be achieved throughout this program, it will continue to get revised and developed in order to help meet some educational criteria for patients dealing with diabetes (Daley & Wallymahmed, 2014).

Mallow, Theeke, Whetsel, & Bar (2013) study shows that the challenges many American's face are the expenses that come with being a diabetic. Currently there are approximately 62 million Americans living in rural areas with 20 percent of that population being uninsured. There is a higher prevalence, approximately 3.5% more, of diabetics in the southeastern region compared to the rest of the country. Higher risk of poor diabetes control, diabetes related health complications, and decreased self-management occurs in rural settings. Mallow, Theeke, Whetsel, & Bar (2014) describe a subset of uninsured patients with diabetes who were receiving care at a rural free clinic. The authors set out to compare outcomes between two groups: patients who are attending Diabetes Group Medical Visits (DGMVs), to those

receiving usual care. The DGMV group benefited from attending the education group regarding diabetes self-care. The research that was conducted over a two year period included three or fewer group visits a year. The results showed improved outcomes, reduced costs, and enhanced patient and clinician satisfaction of diabetes care in adult clients with low income, who are uninsured and receiving care in a rural free clinic. At the onset of the study, the participants attending DGMVs had higher A1C levels compared to those participants receiving usual care patients attending DGMVs. This study summarized that within the DGMVs group, participants had a decrease in systolic blood pressure readings. The mean decrease in systolic blood pressure was 5.49mm/Hg. Other than this finding, no other significant changes occurred between the DGMVs group and the usual care group. A1C levels continued to stay the same after one year of DGMVs groups. This study indicated that DGMVs alone is not a suitable intervention for the given population. Further interventions targeted to unique populations are needed to promote significant change and improvement in these patients.

Gorter, De Leeuw, Rutten, and Van der Wulp, (2012) conducted a randomized controlled trial consisting of patients that were recently diagnosed with Type 2 diabetes from 54 participating general practices to study the effectiveness of peer-led, self-management coaching. This peer-led self-management coaching program consisted of 327 patients that were eligible for participation of which only 133 consented to participate. Participants in the control group who received care as usual were compared to an intervention group who received three home visits by an expert patient (experienced peer) and adhered to the recommended treatment and lifestyle guidelines. A questionnaire was given at the beginning of the study, then at 3 months and 6 months post-intervention. Results indicated significant improvement in self-efficacy, saturated fat intake and coping. Individual participants that initially reported low psychological well-being

were able to improve their self-esteem by 24 percent ($F = 23.84$; $P < 0.01$). Hence concluding that a peer led self-management group improved overall self-efficacy in newly diagnosed type 2 diabetics.

Moskowitz, Thom, Hessler, Ghorob, Bodenheimer (2013) conducted a randomized controlled trial of peer health coaches with a sample size of 299 patients. Researchers provided diabetic patients in public health clinics with diabetic coaching study group that was modified by differences in patients' behavioral, psychosocial or demographic characteristics. At the end of the study participant's A1c was checked to see if the study group was helpful in lowering their A1c. The results showed that the care group had a decrease in A1c of -1.0% and the health coaching group experienced a -1.1% decrease in a self-management. Even though there was a non-statistically significant decrease in both groups, the researchers concluded that a peer coaching group is more beneficial for high-risk patients with diabetes in improving glycemic control, improving self-management and promoting medication adherence.

Based on the review of literature it can be concluded that currently only limited research studies are available in regards to coaching as an educational tool for diabetes patients, that has been proven effective in decreasing A1c levels and improving individual self-efficacy. There is a great need for further research in DM education, specifically to compare other teaching modalities with coaching to see which method is more effective in improving diabetic patient outcomes.

Chapter 3

Study Overview

Based on the above statistics regarding diabetes and the importance of proper diabetes education, further research in this area can greatly benefit diabetics, especially among the low income population. The purpose of this study is not just to answer the research questions. Instead the paper will focus on the problem of DM and approaches to educating and motivating DM patients to better control their disease. The type of education implemented during the research project consisted of verbal, written, group conversation and a standard teacher like approach. The participant's A1C results were used to identify the effects coaching education had on their diabetic control based on their life changes. Specifically this research paper will be focused on coaching as an approach to educating participants with diabetes.

The Diabetes coaching group at Volunteers in Medicine included a group educational interaction and aspects of an individual patient visit, such as: the accumulation of history taking, vital signs, medication evaluation, physical exam, and laboratory collection with evaluation of results. The curriculum was developed by an Advanced Practice Nurse (APN) within the clinic and a research assistant who is an APN student. Volunteers in Medicine is a free clinic that assists uninsured individuals within the community with their health care and medications. The sample consisted of 34 participants with diabetes type 2 diagnoses. Inclusion criteria was that they had an A1C of seven or above. The 34 participants were divided into three sub-groups; first one being a usual care group (12); second, a class group which included a 90 minute one time class (10); and third, the coaching group (12). Another inclusion criteria was that all participants must belong to the uninsured low income diabetic population. The study was conducted over a 6

week period to examine the effects of a coaching group on participant's diabetes control at the end of the allotted time. The coaching group met on six Fridays within two months to discuss their diabetic personal goals, accomplishments, downfalls, blood sugar levels, exercise regimens, and personal life stories that have created stressors within their lives.

The Coaching Group.

As part of the coaching group the clients were educated on blood glucose monitoring, nutrition, exercise, medication, foot care, vision problems, heart disease, strokes, blood pressure, behavior changes and life stressors that lead to diabetes complications. The APN teaching perspective was taken into consideration and the patient's learning styles allowed the patient to choose their diabetes health care plan based on the education provided within the group. This empowers the patient with a feeling of ownership of their own care and a step by step process to accomplish their diabetic goals. It also eliminates the pressure of everyone in the group having to accomplish the same goal whether it pertains to them or not. In the *Case Management Advisor* (2012), Sponholtz said, "We find that a combination of intrinsic development training and motivational interviewing creates a balanced approach for coaches to be successful when working with individuals" (pp. 124-126).

Role as a Research Assistant.

As a research assistant I participated in a number of tasks. At the beginning of the research I was provided a list of patients from Volunteers in Medicine who had a diagnosis of diabetes and had an A1c above 7, which included about 99 qualified participants. The ANP who initiated and funded the research had provided the list and instructions on what was included in the participation for the research. I had phoned the qualified participants and informed them of the benefits of the research, which included; better knowledge of diabetes, diet education,

exercise education, a pedometer, test strips, glucose monitor, a sample of healthy lunch foods, and a \$20 gift at the completion of the six sessions. After multiple people declined to participate due to transportation, timing, work, or having other life situation obstacles, only 21 patients confirmed would attend six sessions over a two month period. I had called those 21 people to remind them to come prior to the first day of defeating diabetes class to fill out their consent forms and surveys, some still were a no-show and I recalled more than 10 individuals. The classes were on Fridays. I assisted in getting the patient's weight and vital signs prior to each class. I also participated in the teaching process using the U.S. Diabetes Conversation Map Program, (see appendix A) which provided facts about diabetes, nutrition, exercise and most importantly a conversation between the patients in the class. The Conversation Map prompted the patients to share their thoughts, ideas, experiences and knowledge about their personal life experiences of diabetes. I collected the data: vital signs, weight, survey information and other pertinent information in regards to the research study and enter it into an excel document for summarization and analysis purposes.

Towards the end of the study there were three patients in the morning group and four patients in the afternoon group that were left in the research. The requirement of attendance, allowance of only one class missed, was fulfilled by seven participants. The classes started on November 6th and ended On December 20th, with final A1c being done in January.

Results and Discussion

Pre-test post-test model was used to evaluate the effectiveness of the intervention. Data were gathered from these tests in the form of a survey. Data analysis was conducted by the lead researcher using SPSS V.22. At end of the six week time period there was consistent increase noted in all three groups with regards to increased diabetic self-awareness and knowledge. A

significant difference was found in the coaching group for the change between the pre-test and post test scores. The control group with usual intervention was noted to have a 7.5 percent increase, while the class group had a 3 percent increase and finally the coaching group had the highest increase of 22 percent. Based on these results it can be hypothesized that diabetes coaching group will be the most beneficial in improving diabetes knowledge, self-efficacy and self-management. In comparing the A1C's of the three different groups at the end of the study, the results did not show a significant difference ($p > 0.5$).

Some of the limitations of the study are as follows: participants belonging to lower income with limited resources had difficulty with transportation to attend the classes; the timing of the research study being close to two major holidays; and poor scheduling that required participant to make multiple trips to the facility for A1c checks, surveys and to attend classes. Another limitation was the short length of the study - maybe not enough time to show significant differences in A1c. Suggestions to possible improvement in attendance is to schedule the A1c checks, survey and the first class all on one day, to make it more convenient for the patient. This type of research would benefit from not being scheduled so close to major holidays when people are busy in general and, of course, a longer time frame would be of benefit. So A1c levels can be observed over 6 months or a year or more.

Evaluation

Diabetes poses many challenges to millions of diabetic patients, especially for low income individuals. Due to the high costs of diabetic care many suffer with insufficient funds for their diabetes management. In the Volunteers in Medicine clinic low income individuals are assisted financially as well as provided adequate health care and medications for this population.

It was a great experience to have been a part of not just the research but the people's lives. Each patient had a unique story, they came to better their health as well as surround themselves with people who struggled with the same health diagnosis. I have observed the way the patients learn and how they bond with each other while their minds do not consider the meetings as research but as coming together and attempting to resolve their life health issues simultaneously. I found this hands-on research interesting because I became a part of helping change the patients' learning process and getting involved within my community. This opportunity enables me to be better equipped in conducting further research. It also gives me better a perspective in educating low income patients in my own future practice regarding effective ways to obtain proper diabetic control.

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