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Improving Diabetes Self-Management (DSM) Among Patients with Uncontrolled Type 2 Diabetes Mellitus (T2DM): A Patient-Centered Education Model

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Abstract

Problem: Type 2 Diabetes Mellitus or T2DM is an epidemic of enormous proportions affecting many individuals globally. Considering the significant burden and adverse outcomes when uncontrolled diabetes and poor self-management remain unaddressed, it is critical to find ways in which clinicians or nurses can help motivate patients to participate in their care. The problem of patients with uncontrolled diabetes at the Davis Street Primary Care Clinic (DSPCC) has been ongoing; in fact, from the 2021 Uniform Data System (UDS) measure update, rates of patients with uncontrolled diabetes (measured by HbA1c values >7%) have gone up from 55% to 80%, which has now quadrupled from the Clinic's target goal of 20%. Problems identified include patients' inability to monitor home blood glucose routinely, sedentary lifestyle, poor diet intake, alcohol drinking and smoking, non-compliance with medication administration, and inability to follow up with their PCPs and referrals.

Intervention: This DNP project aimed to increase knowledge and practice by 50% and decrease participants' weight through Diabetes Self-Management (DSM) education within eight (8) weeks. As there are various ways DSM education is delivered, this DNP project utilized educational presentations, weekly diabetes support group meetings, and individual counseling among ten (10) patients with uncontrolled diabetes. Furthermore, the seven (7) Self-Care Behaviors formulated by the American Association of Diabetes Educators (AADE7) were introduced to participants.

Measures: The data collected included the DSM knowledge and practice using a questionnaire answerable with a Likert scale, weight measurement. Pre-test and Post-test were done to assess the knowledge of participants regarding the Seven (7) Self-Care Behaviors. The outcomes were evaluated by comparing the pre-survey and post-survey data on the 4th and 8th weeks.

Results: In the baseline assessment, data shows that most participants are very negligent in managing their diabetes where the average score for all ten (10) participants was observed to be 1.97. Most of them never check their blood sugar levels regularly with care and attention, record their blood regularly, follow dietary recommendations of the doctor or diabetes specialist, and go to their appointments. It also shows that most participants have no to little knowledge about the seven (7) self-care behaviors in managing their diabetes. After the eight (8) weeks of intervention, there are more than 3 (>3) point increase in the average scores of the participants, indicating that their knowledge about self-managing their diabetes has improved. In addition, the participants have decreased more than five (5) lbs of their weight from the 1st week to the 8th week of intervention.

Conclusion: The intervention of educational presentations, diabetes support groups and individual counseling for 8 weeks have increased the knowledge of the eight (8) out of ten (10) patients with uncontrolled type 2 Diabetes Mellitus (T2DM) by 50% with regards to blood sugar checking, blood sugar results recording, and adherence to dietary recommendations.

Seven (7) out of 10 participants have increased their knowledge by 50% with regards to the areas of healthy eating, being active, taking medications, healthy coping, problem-solving, reducing risks or complications, and monitoring blood sugar. The participant's weight has also improved.

Keywords: diabetes self management, diabetes self-management education, dsme, diabetes education, uncontrolled diabetes

Background

Type 2 Diabetes Mellitus or T2DM is an epidemic of enormous proportions affecting many individuals globally – regardless of age, race, and social status, and if not controlled, can cause complications including stroke, eye problems and blindness, heart disease, kidney disease, limb amputation, nervous system problems, and even impotence. Uncontrolled Diabetes is defined as blood glucose levels higher than the recommended target range, and the Hemoglobin A1C level is > 7% (Kumah et al., 2018). Considering the significant burden and adverse outcomes when uncontrolled diabetes and poor self-management remain unaddressed, it is critical to find ways in which clinicians or nurses can help motivate patients to participate in their care. T2DM is a preventable, chronic disease mainly caused by lifestyle factors. As such, self-care behaviors that may prevent acute and long-term diabetes-related complications like a healthy diet, exercise, compliance to medication, eye care, foot care, and adaptation to psychosocial challenges must be adopted by those suffering from the disease (Reyes et al., 2017; Xu et al., 2019).

As education is the most vital component in diabetes self-management, a mode of delivery that will ensure meaningful and applicable learning in patients is necessary. DSME is known to be effective but at times unsustainable, with patients falling back into bad habits after a certain amount of time. To address the issue of poor self-management among individuals with uncontrolled diabetes, review findings support using cognitive behavioral therapy, counseling, nurse coaching, online programs, and many others to empower those with uncontrolled diabetes to self-manage (MacKenzie et al., 2020; Powers et al., 2016; Winkley et al., 2020).

Diabetes knowledge is a vital aspect of self-management in patients; many researchers posit that it effectively improves outcomes. Many interventions exist to deliver information,

among the most documented of which are interventions involving cognitive behavioral therapy, social support therapy, and counseling. Counseling regarding diabetes education may involve nutrition, physical activity, pharmacotherapy, or even depression, which is prevalent among people with diabetes. Powers et al. (2016) describe that psychosocial counseling or plain counseling is often used to improve self-management among people with diabetes.

Problem Description

A number of patients present to the clinic with complications from diabetes due to poor self-management, especially involving medication adherence. In addition, commonly identified gaps in diabetes self-management skills include recognizing and managing the impact of stress on diabetes, exercise planning to avoid hypoglycemia, and interpreting blood glucose pattern levels. This means that a more robust educational intervention is needed to augment the usual or traditional way of delivering DSME to patients.

While many interventions exist to deliver information, due to time constraints and possible additional costs with other modes of DSME, this DNP project utilized weekly educational presentations, individual counseling, and diabetes support group meetings which are most cost-effective and just as efficacious in enhancing outcomes and self-management in patients with uncontrolled diabetes.

Project Setting

The Davis Street Primary Care Clinic (DSPCC) in San Leandro, CA is a Federally Qualified Health Center (FQHC) that provides low-income residents of Alameda County and its surrounding area with a full range of services namely preventative care, chronic disease management, wellness exams, health screenings, and any acute health issues. As an FQHC, the DSPCC accepts Medicaid, Medi-Cal, Medicare, and private insurance plans, including Health

Program of Alameda County (Health PAC), Anthem Blue Cross and Blue Shield of CA,

Alameda Alliance, and self-pay patients. Clinicians working in DSPCC are actively licensed and

certified in California to provide care for patients coming into the clinic. The DSPCC's mission

is to improve the quality of life of the low-income residents in the San Leandro area and

surrounding communities. The said mission supported this DNP Project as it would help

participants help themselves as they would gain knowledge and improve practices with diabetes

self-management. With authorization from Dr. Carol Alvarez, CPO, and with the support of the

medical staff, DSPCC was the setting of this DNP project.

Community Needs Assessment

It is found that clinicians are only allowed a 20-minute time allocation (including time

spent charting) for each of their patients at a Primary Care due to billing and productivity

purposes. With this very limited amount of time, many patients with complex or multiple

problems receive poor patient-clinician interaction and poor quality of care which also results in

poor patient outcomes (Young, et. al). Furthermore, it has been a distressingly frequent

occurrence to have over half of the diabetic patients coming into the DSPCC with uncontrolled

diabetes. The problem of patients with uncontrolled diabetes at the DSPCC has been ongoing, in

fact, from the 2021 Uniform Data System (UDS) measure update, rates of patients with

uncontrolled diabetes (measured by HbA1c values >7%) had gone up from 55% to 80%, which

has now quadrupled from the Clinic's target goal of 20%.

Problems identified after conducting community needs assessment include patients'

inability to routinely monitor home blood glucose, sedentary lifestyle, poor diet intake, alcohol

drinking and smoking, non-compliance with medication administration, and their inability to

follow-up with their PCPs, and endocrinology, ophthalmology, and podiatry referrals which were

all vital in managing diabetes. Everything mentioned could be improved if the 7 Self-Care

Behaviors formulated by the American Association of Diabetes Educators (AADE7) were well

introduced to patients with uncontrolled T2DM. Thus, this DNP project would be beneficial in

improving the above UDS report.

As self-management is a critical element in controlling diabetes, educating diabetic

individuals about its value and how to achieve it is of the utmost importance. Due to this,

diabetes self-management education (DSME) is forwarded to address issues concerning

medication adherence, poor glycemic control, and lifestyle improvement. Having patients come

to the clinic with these issues is an opportunity to make DSME more accessible with the hopes of

improving glycemic values, encouraging a healthier lifestyle, thereby avoiding complications

like cardiovascular disease, nerve damage, kidney injury, and skin conditions that further lower

their quality of life besides adding significant burden to the expenses related to healthcare costs.

PICOT

The PICOT question addressed was: Does a patient-centered education model improve

Diabetes Self-Management (DSM) among patients with uncontrolled Type 2 Diabetes Mellitus

(T2DM)?

Available Knowledge

T2DM is chronic but may be managed to prevent morbidity. As such, self-care behaviors

that may prevent acute and long-term diabetes-related complications – like a healthy diet,

exercise, compliance to medication, foot care, and adaptation to psychosocial challenges have to

be adopted by those suffering from the disease (Kumah et al., 2018; Reyes et al., 2017; Xu et al.,

2019). A study by Xu et al. (2019) investigated whether providing patients with uncontrolled

diabetes with blood glucose supplies improved self-care and found evidence that this was so. It is

even more encouraging that both insulin and non-insulin-taking patients showed enhanced self-care habits and glycemic control, as evidenced by their lab work. Adu et al. (2019) support this by citing a correlation between consistent engagement in diabetes self-management and a host of health outcomes such as blood sugar maintenance, less morbidity from complications, and overall quality of life. Today, despite strong calls to take on diabetes self-care, many patients still suffer from complications of T2DM and hardly practice it. Among barriers like financial constraints, difficulties in changing one's lifestyle, and inadequate communication with healthcare providers, is patients' lack of or inadequate knowledge about self-management, which may lead to non-compliance to recommended practices in diabetes management. Mikhael et al. (2019) support this by saying that the participants mainly lacked knowledge of self-management but had positive attitudes towards it in their study.

Additionally, DSME is known to be effective but at times unsustainable, with patients falling back into bad habits after a certain amount of time. To address this issue of poor self-management among individuals with uncontrolled diabetes, review findings support using cognitive behavioral therapy, counseling, nurse coaching, and many others to empower those with uncontrolled diabetes to self-manage (Kanapathy & Bogle, 2019; MacKenzie et al., 2020; Miyamoto et al., 2019; Powers et al., 2016; Winkley et al., 2020). Diabetes knowledge is a vital aspect of self-management in patients; many researchers posit that it effectively improves outcomes.

Counseling regarding diabetes education may involve nutrition, physical activity, pharmacotherapy, or even depression which is prevalent among people with diabetes. Powers et al. (2016) write that psychosocial counseling or plain counseling is also a strategy often used to improve self-management among people with diabetes. In addition, Weitgasser et al. (2019)

write that patient empowerment is essential and can be achieved through counseling as it empowers patients to take charge and change the course of illness. A 2006 study by Kampan investigated the effects of counseling on T2DM patients with hypoglycemia. This study suggested that counseling and implementation of clinical pathways on type 2 diabetic patients result in shorter hospital stays and decreased readmission rates. Malathy et al. (2011) found other benefits of counseling diabetic patients. Besides significant improvements in glucose control, postprandial blood glucose levels also decreased significantly, as did Total Cholesterol (TC), Triglycerides (TGL), and Low-Density Lipoprotein levels (LDL), making counseling an excellent adjunct to other diabetes management strategies.

Moreover, social support is a vital aspect of a person's life. A diabetic individual is likely to respond positively to social support regarding their care as it motivates the patient to take up self-care. Song et al. (2017) found a strong relationship between social support and self-care in T2DM across 28 studies. Werfalli et al. (2020) backed this systematic review with the findings from their own study wherein a positive association between family support and self-management practice score was found. Koetsenruijter et al. (2016) weigh in by sharing that social network characteristics were positively linked to self-management capabilities. Social support networks that come with informational support may be effective in low education populations.

Many support interventions also involve peers. A randomized controlled study by Tang et al. (2015), conducted in an African American community, found that while significant improvements in cardiovascular disease risk factors were seen, the peer-led program hdid not affectthe participants' HbA1c levels. Reyes et al. (2017) weigh in with their descriptive qualitative study that incorporating formal and informal patient support structures was important

to diabetes self-management as related by patients in their interviews. Support networks may be best if augmented with other modes of delivering diabetes-related information.

Educational Programs. Educational programs for diabetes improve patient outcomes in most of the studies included in the systematic review of Kumah et al. (2018). This is supported by Andrich and Foronda (2020), who had found that diabetes self-management education, support, and goal-setting sessions were effective in increasing patient knowledge leading to a statistically significant decrease in mean fasting blood glucose (FBG) as well as a statistically significant increase in quality of life (QOL). A study by Azami et al. (2018) also garnered similar results wherein "significant improvement in HbA1c, blood pressure, body weight, efficacy expectation, outcome expectation, and diabetes self-management behaviors" (p.1) were seen after a nurse-led diabetes self-management education. With their nurse-led educational program, Hailu et al. (2019) found significant improvements in participants' diabetes knowledge scores and their adherence to dietary and foot care recommendations.

Azami et al. (2018) study is a two-arm parallel-group randomized controlled trial that randomly assigned participants into a control group who had received the usual diabetes care and the intervention group who had the usual care complemented by nurse-led diabetes self-management education. The 12-week intervention included information on self-management delivered through a detailed booklet, four movie clips, four weekly group-based educational sessions, and weekly follow-up telephone calls. Laboratory and clinical measures, as well as questionnaires, were used to measure outcomes. Questionnaires like the Diabetes Management Self-Efficacy Scale (DMSES), Perceived Therapeutic Efficacy Scale (PTES), Quality of Life Scale (WHOQOL-BREF), Medical Outcome Study (MOS) Social Support Survey (SSS), and Centre for Epidemiology Studies Short Depression Scale (CES-D) were used to measure all the

other variables in the study. Time points of rechecking were at the 12th and 24th weeks and statistically significant differences in the changes in systolic blood pressure and diastolic blood pressure from baseline between the two groups were found. By the 12th week, those in the intervention group had significantly lower HbA1c values (a difference of 47.9%), which reduced even further by the end of the 24th week, making the difference 62% than those in the control group. At the end of the intervention period, significant improvements in glycemic control, blood pressure, body weight, efficacy expectation, outcome expectation, self-management behaviors, and social support were seen compared to patients in the control group.

Diabetes Wellness Support Group. Andrich and Foronda (2020) conducted a quasi-experimental study that used twenty-minute DSME, support, and goal setting sessions at the clinic that included information sharing as well as behavioral and psychological support for disease management and even care coordination. Educational sessions lasted for 120 minutes focusing on knowledge building and self-efficacy. The assessment of participants' diabetes-specific QOL was administered by one of the researchers using the D-39 scale. A 15% increase in DSME use was seen in the sample population, from 20% rising to 35% after the intervention. FBG levels decreased almost ten points from the baseline of 146.2 to 136. Significant decreases were also seen in diabetes control (68.3 to 59.8), anxiety and worry (51.3 to 43), social burden (21 to 18.3), sexual functioning (44.2 to 42.6), and energy and mobility (60 to 47.6) all saw significant decreases. The study proved that with increased use of DSME, improvements in glycemic control and quality of life are attainable.

In Hailu's (2019) before-and-after, two-group intervention study, 116 participants were subjected to an educational intervention on diabetes self-care. Two nurses administered the intervention and included six interactive sessions, augmented with handbooks and flyers,

experience-sharing, and take-home activities. Data collection tools were the Simplified Michigan Diabetes Knowledge Scale (DKS), the Summary of Diabetes Self-Care Activity (SDSCA), and the Diabetes Self-Efficacy tool developed by the Stanford Self-Management Resource Center (SMRC). The difference in the mean Diabetes Knowledge Scale scores before and after the DSME intervention was significantly greater in the intervention group (p = 0.044). At the end of the 6-month period, the intervention group reported a greater mean diabetes knowledge score, followed general dietary recommendations for 5.06 days per week (as opposed to 4.44 days with the controls), performed foot care for a mean of 5.80 days per week (compared to 5.26 days/week). While there are mixed results, these studies support the claim that educational programs led by healthcare professionals generally came up with positive outcomes.

Individual Counseling. One element in the intervention by Ni et al. (2019) was individualized counseling via telephone and face-to-face follow-up visits. This nurse-led intervention effectively improved glycemic control, QOL, hospitalization, and help-seeking behavior in diabetic patients. Fan et al. (2016) studied the effect of individualized DSME and found that it was an effective mode of delivering DSME, as did Macido in his 2019 study. Chai et al. (2018), in their study investigating the effects of DSME on psychological status and blood glucose, revealed that their participants exhibited significant improvements in both areas after the intervention. In a study by Magee et al. (2019), diabetes education was highly individualized as each patient was contacted virtually by the nurse practitioner and specialist weekly for ten weeks. This had translated to better self-management and increased knowledge on self-care for the patients.

Chai et al. (2018) conducted a randomized controlled trial where DSME was given to two sets of participants. Professional education nurses delivered the educational intervention using

Problem Based Learning (PBL) through lectures, audio-visual methods, discussions, and demonstrations. The intervention took two lecture sessions and interactive sessions where patients can share and gain information. The intervention group participants were given record sheets to track their eating patterns, physical activities, medications, and blood sugar and give these to the researchers after a week. These were then made the basis of individualized suggestions to enhance how they manage their diabetes. By the end of the 6-month intervention, HbA1c, fasting blood glucose, and postprandial blood glucose levels became significantly lower.

Fan et al. (2016) also studied the effects of individualization on patients with T2DM. Before conducting this randomized clinical trial, eight practicing nurses were trained on how to deliver diabetes education. The participants were asked to accomplish the Eysenck Personality Questionnaire, a tool that would determine the personality types from which their individualized education was planned. Individualized education was delivered through face-to-face counseling based on their personality. An assessment of the patients' diabetes knowledge and self-care was also taken before they were given tailor-made plans regarding their care. The plans were collaborated by nursing educators and a clinical psychologist for soundness. Monthly follow-ups for the next six months were conducted, with bi-monthly telephone calls to check on the patients' concerns. At the end of the research study, the body mass index, waist circumference, fasting blood glucose, systolic blood pressure, triglyceride, and low-density lipoprotein all decreased and were lower than that of the control group who received the normal education.

In Macido's (2019) single group quantitative, descriptive, pretest-posttest study, a nurse-led DSME program was used to investigate whether it led to improved patient knowledge of DM and medication adherence. First, participants' knowledge of DM was measured with the Revised Diabetes Knowledge Test (DKT2) and their medication adherence with the Medication

Adherence Questionnaire (MAQ). The participants were then subjected to a one-to-one non-structured education session on DSME using a brochure from the American Association of Diabetic Educators (AADE) seven Self-Care Behaviors designed by Macido (2019) himself. This study confirmed how effective DSME was in improving the knowledge of participants when delivered by nurses. However, no change in medication adherence was found as the study was conducted in a 24-hour period, too short a duration to measure such a variable.

On the other hand, Ni et al. (2019) designed 24-month-long projects wherein the intervention was a nurse-led multidisciplinary team management effort. Nurses went through training that included theory and practical experiences prior to delivering DSME. A series of group education sessions were held for the participants who had uncontrolled diabetes. After that, patients were individually counseled by the nurses via telephone and face-to-face follow-up visits. Pamphlets and workbooks were also provided to the patients to ensure that they have the information they needed at hand. The measurement tools used were HbA1c assays and a researcher-designed questionnaire regarding demographic, hospitalization, and help-seeking behavior, and the 36-item Short-Form Health Survey (SF-36) for the QOL. After the intervention, HbA1c in the intervention group decreased from 7.08% to 6.03%, and a reduction in the odds ratio of hospitalizations was found (2.981 to 1.189). Help-seeking behavior also improved compared to the controls (44.8% versus 8.1%) with patients favoring seeking help from nurses rather than doctors. Improvements in the intervention group were sustained over the two-year duration.

Based on the evidence discussed, potential practice change involved the use of DSME, weekly diabetes support group meetings, and weekly individual counseling to effectively

transmit important DSM information and sustain gains, if any, among patients with uncontrolled

diabetes.

Rationale

Rosswurm and Larrabee's theoretical model guided this project. Rosswurm and

Larrabee's (1999) conceptual model has six (6) main elements that include:

1. *Evaluating the necessity for quality improvements.* This stage includes involving the

   stakeholders, gathering internal information about the current practice, comparing

   internal and external information, and recognizing the practice problem. It also entails

   defining a PICOT question that categorizes the target population, interventions,

   comparisons, outcomes, and time, which helps refine the practice problem and support

   the literature search.

2. *Linking clinical problem, intervention, and outcome.* This phase comprises using

   standardized language and arrangement systems, finding possible interventions, and

   choosing outcomes indicators.

3. *Appraising and synthesizing available evidence.* This involves searching the

   identification of available evidence, critically reviewing, and weighing the strengths of

   current research, synthesizing the best literature, and appraising the benefits, risks, and

   feasibility of the practice change. In this project, a rapid critical critique was performed

   for every study included or excluded.

4. *Designing Change in Practice.* This step includes the definition of suggested practice

   change, identifying the required resources, planning the pilot test assessment, and

   developing the implementation strategy. The change strategies identified include opinion

leaders, change agents, a reminder system, educational materials, educational sessions,

audits, and feedback.

5. *Applying and appraising change.* The main tasks in this phase include implementing the

pilot test, assessing the process, costs, and outcomes, and creating recommendations and

conclusions.

6. *Incorporating and upholding change in practice.* The main tasks in this phase include

communicating the change proposals to the stakeholders, integrating the new methods

into practice principles, observing the outcome and process, and sharing the project

findings.

The primary rationale for using this model was that it systematically offered guidance to

develop and incorporate evidence-based interventions. Additionally, the model is suitable for an

educational project; therefore, making it appropriate for DSME and training. The model is also

well structured, easy to implement, and permits continuous monitoring of executed projects. This

theoretical framework represented the relationship between the DSME and its potential to allow

diabetic patients to recognize what they could do to improve their diabetes, determine danger

signs, seek help, or undergo self-care to elevate their quality of life.

In this study, a necessity for quality improvement has become imperative due to the

increasing number of T2DM patients with uncontrolled diabetes; hence, they were identified as

the target population. The intervention was focused on providing DSME using evidence-based

educational materials. The knowledge and practices on diabetes self-management were

determined before the conduct of the DSME and compared with the data on the 4th week and 8th

week. In the DSME, two (2) educational sessions and weekly follow-ups were done. The

materials used were based on the guidelines issued by the American Diabetic Association

(ADA). The impact of the DSME was appraised through a comparison of the DSM pre-survey and DSM post-surveys (on the 4th and 8th week of the intervention).

Ethical and Policy Considerations

The theoretical framework of Rosswurm and Larrabee (1999) is congruent to the core values of the University of San Francisco School of Nursing and Health Professions to positively influence health care environments by promoting health and wellness, patient-centered care, cost-effective care, emerging technologies balanced with a humanistic approach, professional and ethical decision-making, increased access to care, especially for vulnerable populations, and effective public health infrastructure, and lifelong learning.

This DNP project was also approved by the USF DNP Program as a project. Because this project did not involve original research, it did not require the institutional review board (IRB). Moreover, the Statement of Determination for this project, approved by the DNP chair and DNP committee member is found in Appendix A.

This DNP project complied with the U.S. Department of Health and Human Services' (2020) Health Insurance Portability and Accountability Act (HIPAA) of 1996. Although medical records were accessed as part of the project intervention, any related information offered by participants was completely voluntary and with written consent (Appendix D). Moreover, weekly individual counseling or in-person meetings were not video-recorded as part of HIPAA.

Project Aim

The purpose of this DNP project was to initiate Diabetes Wellness for patients with uncontrolled diabetes in Davis Street Primary Care Clinic (DSPCC) through the introduction of Diabetes Self-Management (DSM) consisting of educational presentations (Appendix H and J),

diabetes support group meetings, and individualized counseling to enhance participants'

knowledge and practice on diabetes self-management.

This project aimed to increase knowledge by 50% on the following: blood glucose

checking and recording, adherence to dietary recommendations, engagement in physical activity,

and adherence to medical appointments. This project also aimed to increase self-care behaviors

by 50% in at least two (2) of the following areas: healthy eating, staying active, taking

medications, healthy coping, problem-solving, risk or complication reduction, and blood glucose

monitoring. In addition, the goals of this DNP project also included: decreasing participants'

weight by at least five (5) pounds within eight (8) weeks.

Methods

Project Authority. A signed project authorization was obtained from Dr. Carole Alvarez,

CPO of DSPCC, prior to the participants' recruitment process (Appendix B). The Project

Authorization Letter stated that the CPO and clinic staff would allow this writer to conduct her

DNP project in-clinic, including any limitations and what responsibilities if any, they are

assuming. The project timeframe involved was also included in the letter.

Description of Intervention. Patients determined to have HbA1C >7 the past year who

verbally agreed to be part of this project were invited to be in the clinic for 8 weeks every Friday

for educational presentations (Weeks 1 & 2), and diabetes support group meetings (Weeks 3 to

8). Signed written consents (Appendix D) were obtained before DSM pre-surveys were

collected, including DSM knowledge and practice using a questionnaire answerable with a Likert

scale, and weight measurement. Consenting participants were deidentified from their name and

was given corresponding number such as P1 for Participant 1, P2 for Participant 2, P3 for

Participant 3, and so on. This was done in order to maintain their animosity while participating in this project.

The weekly in-perosn diabetes support group meetings included free breakfasts for each participant, group exercises, and follow-up discussions on how each participant was doing with DSM looking closely at their meal planning/logs, medications issues, glucose monitoring, and insulin administration through the teach-back method. Patients were then called weekly (every Tuesday) over the phone for follow-up or any queries.

DSM Post-Surveys were collected on the 4th week and 8th week, which included DSM knowledge and practice using a questionnaire answerable with a Likert scale. Both data collected from DSM Post-Survey #1 (Week 4) and DSM Post-Survey #2 (Week 8) were compared from DSM Pre-Survey (Week 1). The DSM Post-Survey #2 also included the participant's latest weight.

Outcome Measurement. The outcomes were evaluated through the use of several metrics. The Diabetes Self-Management (DSM) pre-survey (1st week) and post-survey (8th week) included a 5-item questionnaire on the DSM. This was followed by a 7-item questionnaire that inquired about DSM's seven (7) self-care behaviors, including healthy eating, being active, taking medications, healthy coping, problem-solving, reducing risks or complications, and monitoring blood glucose. The average score was 3 points, which would be compared post-survey to see if there was an improvement if the score was >3 points. The participants' weight was obtained before the educational session (1st week) and the 8th week of intervention. These were then compared to determine if there were improvements on both. Also, on the pre-survey, the questionnaire, weight was assessed and whether patients had a close follow-up with their PCP, endocrinologist, ophthalmologist or podiatrist within the past year.

On the 1st and 2nd weeks, knowledge regarding topics discussed was measured through a 10-item Pre-test and Post-test. On the other hand, to continuously assess the participants' knowledge regarding topics previously discussed, a 14-items (2 items for each behavior) Pre-test and Post-test for every diabetes support group meeting (weeks 3 to 8) were obtained from the participants. In addition, to evaluate the competency/practice of blood glucose monitoring and insulin administration, a teach-back show-me method was done in each in-person meeting. Compliance with follow-up with PCP and referrals were closely monitored/logged.

Work Breakdown Structure
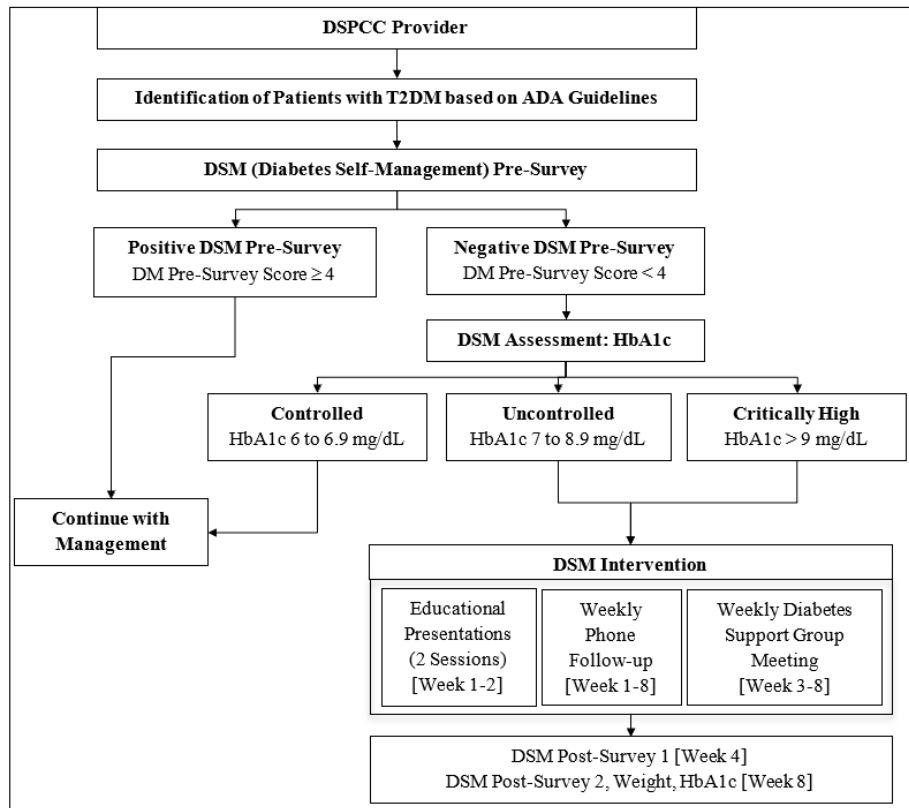
The formulation of a Work Breakdown Structure (WBS) was necessary for the timely implementation of this DNP project. The WBS identified the steps required to ensure prompt execution and specific details associated with this project (Appendix U). At the DSPCC, providers acknowledge the standardized practice of screening all adults for prediabetes and

diabetes beginning at age 45 and all adults who are overweight (BMI > 25) and BMI >23 in

Asian Americans with additional risk factors regardless of age. The DSM Pre-survey was

intended to initially assess the individual's self-care activities related to DSM. If the respondent

scored positive on the DM Pre-Survey as indicated by an average score of 4 and above, they

were advised to continue the current management and were not included in this study. The

participants who had negative DSM pre-survey scores (less than 4), underwent the DSM

Assessment using their HbA1c within the past year.

Those with HbA1c of $\geq$ 7% were included in the study. These individuals were then

given DSM education which included the 7 Self-Care Behaviors: healthy active, being active,

taking medications, healthy coping, problem-solving, reducing risks, and monitoring blood

sugar. This DSM education was given through educational presentations delivered on the first

two (2) weeks (Appendix H and J). Participants were then placed on weekly in-person diabetes

support group meetings and phone follow-ups for individual counseling for the duration of eight

(8) weeks.

Barriers to Implementation

Barriers to program implementation were identified through informal discussions among staff

and healthcare professionals on the site and patients. Moreover, patient-level barriers included

technological literacy and non-compliance to recommendations because some patients had little

formal education and had literacy issues. In addition, 3 of the 13 initial participants were unable

to complete this project implementation due to the required COVID19 isolation after contracting

COVID 19 within the 8 weeks of project implementation. Therefore, only a total of 10

participants completed this DNP Project.

SWOT Analysis

A Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis (Appendix V) was formulated to distinguish both internal and external aspects that would impact the implementation of the project. The SWOT Analysis gave this researcher the chance to assess possible positive or negative outcomes.

Strengths. This project would increase DSM knowledge and practices among people with uncontrolled diabetes. Moreover, this project would also address issues concerning medication adherence, poor glycemic control, and lifestyle improvement. This DNP project would also be cost-effective and worthwhile and would improve outcomes and self-management.

Weakness. This project was a pilot study with a limited target population of 10 to 15 participants. And in the end, only 10 participants were able to complete this project.

Opportunities. Many opportunities abound in this project. This DNP project had the opportunity to enhance knowledge and practices in diabetes self-management (DSM). Through evidence-based DSME lectures, individual counseling, and support group meetings, participants would have the ability to improve their diabetes self-management knowledge and practices.

Threats. Challenges and threats in project development and implementation were inevitable. Since the project population would focus on patients with uncontrolled diabetes at a primary care clinic, there were possibilities of non-completion of surveys due to attitude and perceived lack of time to finish the survey at the end of an in-person group meeting. The foreseeable consequences of the COVID-19 restrictions/protocols also posed a threat to the project implementation as the social distancing and those with COVID19 positive diagnosis were not allowed to participate in-person per the project setting protocol.

Variance Control

In order for a successful implementation of this project, a Gantt chart (Appendix W) and a communication plan (Appendix X) were formulated. These allowed the researcher time to implement and measure outcomes in a timely manner. A Gantt chart was produced to provide a timeline for the specific events on the project. The Gannt chart detailed the entire course undertaken by the researcher. At the completion of the coursework, the DNP project started with the literature search. The project was established, and a review was done with the DNP chairperson. Goals and objectives were developed while the implementation of the project spanned eight (8) weeks. Data collection started during the DSM pre-survey, and the data collected included the DSM knowledge and practice using a questionnaire answerable with a Likert scale, weight, and HbA1c levels. Pre-test and Post-test were gathered to assess the knowledge of participants regarding Seven (7) Self-Care Behaviors. The outcomes were then evaluated by comparing the pre-survey and post-survey data on the 4th and 8th weeks. Presentation of findings would then come after evaluation of findings. The last step for this DNP project is finalizing the project write-up which is done prior to the date of graduation.

On the other hand, because of the COVID pandemic, all communications with the DNP chair were managed via emails, phone calls, text messaging, and zoom meetings, and communication with the DNP Committee Member, Dr. Joan Fraino was via in-person, phone, text, and email. Initial communication with DSPCC staff was presented through an in-person visit at the DSPCC and as needed thereafter. In order to not add a burden to clinician workloads, communication, education, and training were provided by this DNP student every Friday when patients are at the clinic for in-person wellness education for the duration of two (2) weeks and diabetes support group meetings for the next six (6) weeks. The project spanned eight (8) weeks,

and participants were present in-person at the clinic during the DSM Assessment, educational

presentations, and diabetes support group meetings. The 7 Self-Care Behaviors of the American

Association of Diabetes Educators served as the DSM education topics. The most current

evidence-based literature and studies regarding DSME and its importance of application of

implementation into practice were also discussed. Education and diabetes support group

meetings were done from 9:30 am to 11:30 am with a complimentary breakfast for participants.

However, there were times when meetings extended until 12 noon or later depending on the

involvement of the participants with that day's group discussion and exercises. The weekly

Diabetes Support Group meeting agenda included free breakfast, group exercises, and follow-up

with how the group was doing with DSM looking closely at their meal planning/logs,

medications issues, blood glucose monitoring, etc. There were post-implementation follow-ups

on the 4th and 8th week for further assessment, feedback, and questions. The DSME Assessment

Questionnaires were given to patients prior to the start of the first educational session and had to

be submitted after 15 minutes.

Project Resources

The resources utilized in this DNP project included the use of educational materials, time,

and financial expenses. The educational materials developed included the educational

presentation slides, learning packets with the pre-test, post-test, and handouts for the educational

sessions, and pens). In addition, time was also spent to assess the patients that qualify for this

study. Travel expenses were also incurred, and the budget and cost spent are detailed below.

Budget and Cost Analysis

The overall budget for this project was $650.00. This included breakfast for each

participant, resources and educational materials (handouts, folders, pens, and printing), and travel

expenses. An additional $50.00 was saved as a contingency fund for unanticipated events. The

DNP author provided free breakfasts ($5 each) to all patients who participated in every meeting.

With thirteen (13) patients participating in the first five (5) in-person meetings and ten (10)

patients participating in the last three (3) in-person meetings, the total cost of breakfast was

$475.00. All funding for this project was from the DNP author's personal funds as additional

funding from outside sources was not required or sought due to the fact that the budget

requirements were minimal enough as detailed in Appendix Y. This also included the student's

(DNP author) time spent for community assessment (40 hours), project research (40 hours),

project research (30 hours), project planning (40 hours), recruitment of participants (16 hours),

creation of learning materials, pre-test/post-test and handouts (24 hours), project implementation

(96 hours), data analysis (24 hours), and DNP project writing (40 hours). This time amounted to

roughly 310 hours (Appendix Y).

   With program continuation, participant compensation (in form of a breakfast meal) may

be necessary for continued participation adding cost to the ongoing program. If there would be at

least 10 participants in each week's in-person meeting, and with resources and educational

materials, travel expenses, and contingency funds added up for 52 weeks, the total annual

expense/budget would cost $3,770.00.

   Overall, this DNP project entailed a potential additional cost for the DSPCC to

indefinitely continue the program. If any clinic were to adopt this program, or if the DSPCC

needed to hire a project manager to continue running this program, a portion of the salary needs

to be included in the annual budget. Assuming a time commitment of 6 to 8 hours per week for

the program by a hired project manager and with $45 per hour salary, the cost to continue with

the program would be $17,810.00 to $22,490.00 as seen in Appendix Z. However, if a graduate

student, volunteer or already paid licensed staff continues the program at no additional cost, the total annual budget would only be $3,770.00.

As noted, the actual cost-benefit would be difficult to calculate with precision, but it is optimistic. In general, DSM programs are cost-effective as they are estimated to reduce long-term complications. Furthermore, an effective self-management program like this DNP project can justify the necessary reimbursements for close follow-up with patients with uncontrolled diabetes. As it is found, effective blood glucose management can reduce the risk of eye, kidney, or nerve complications by 40%. Routine eye exams and timely treatment can also reduce diabetes-related blindness by up to 90, and healthcare services including routine foot exams and diabetes education can reduce diabetes-related amputations by 85% (Brownson, et. al).

Desired Outcomes

The desired outcomes for this project included:

1. Increased knowledge (by 50%) on the following:

    a. blood sugar checking;

    b. blood sugar results recording;

    c. adherence to dietary recommendations;

    d. engagement in physical activity; and

    e. adherence to the doctors' appointments.

2. Increased Self-Care Behaviors (by 50%) in at least 2 of the following areas: healthy eating, being active, taking medications, healthy coping, problem-solving, reducing risks or complications, and monitoring blood sugar.

3. Decreased weight by at least five (5) pounds within eight (8) weeks;

The outcomes were evaluated by using several metrics. The Diabetes Self-Management (DSM) pre-survey (1st week) as seen in Appendix E and post-survey (4th week and 8th week) as seen in Appendix N and Appendix S included a 5-item questionnaire on the DSM. This is followed by a 7-item questionnaire that inquired about the Seven (7) Self-Care Behaviors of DSM which includes healthy eating, being active, taking medications, healthy coping, problem-solving, reducing risks or complications, and monitoring blood sugar. The average score was 3 points, which was then compared post-survey to see if there was an improvement if the score was >3 points. The weight was also obtained before the educational session (1st week) and obtained on the 8th week of intervention and compared to determine if there was an improvement. The weight and whether participants have had a close follow-up with their PCP, endocrinologist, ophthalmologist, or podiatrist within the past year was noted and if not, referrals were then made.

On the 1st and 2nd weeks, knowledge regarding topics discussed were measured through a 10-item Pre-test and Post-test (Appendix G and Appendix I). On the other hand, to continuously assess the participants' knowledge regarding topics previously discussed, a 14-items (2 items each behavior) Pre-test and Post-test for every diabetes support group meeting (weeks 3 to 8) were obtained from the participants as seen in Appendix K to Q. In addition, to evaluate the competency/practice of blood glucose monitoring and insulin administration, a teach-back show-me method was done in each in-person meeting. Compliance with follow-up with PCP and referrals were closely monitored/logged by this author.

Results and Discussion

Table 1 shows the pre (Week 1) and post (Week 8) DSM survey on practices and knowledge of DSM seven (7) self-care behaviors. In the baseline assessment, data shows that

most participants are very negligent in managing their diabetes where the average score for all

ten (10) participants was observed to be 1.974. Most of them never check their blood sugar levels

regularly with care and attention, record their blood regularly, follow dietary recommendations

of the doctor or diabetes specialist, and go to their appointments. It also shows that most

participants have no to little knowledge about the seven (7) self-care behaviors in managing their

diabetes. Out of 10 participants, seven (7) participants (P1, P3, P4, P5, P6, P9, and P10) have

little knowledge and three (3) participants (P2, P7, and P8) have average knowledge about

healthy eating. Eight (8) participants have average knowledge about being active and two

participants (P9 and P10) have little knowledge. On the knowledge about taking the medications,

seven (7) of the participants have no knowledge and only participants (P2, P7, and P8) have the

average knowledge. All of them have no knowledge about healthy coping. On the other hand,

most of them have little knowledge on how to reduce the risks or complications, only

participants (P5 and p9) have no knowledge, and participants (P2 and P8) have the average

knowledge. In monitoring the blood sugar, participants (P1, P3, P6, and P)10 have little

knowledge, participants (P2, P4, P5, P7, and P8) have the average knowledge, and participant 9

has no knowledge.

After the eight (8) weeks of intervention, there are more than 3 (>3) point increase in the

average scores of the participants, indicating that their knowledge about self-managing their

diabetes has improved. The overall knowledge of participants (P1, P2, P3, P4, P5, P6, P7, P8, P9,

and P10) has improved to 60%, 41.67%, 67.86%, 66.07%, 62. 07%, 67.24%, 43.86%, 37.29%,

70.91%, and 71.67%, respectively.

Table 1. Pre (Week 1) and Post (Week 8) DSM Survey on Practices and Knowledge on DSM seven (7) Self Care Behaviors

PRE AND POST SURVEY QUESTION	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8
	P1		P2		P3		P4		P5		P6		P7		P8		P9		P10	
1. I check my blood sugar levels regularly with care and attention.	1	4	3	5	1	4	1	4	1	5	1	5	3	5	3	5	1	4	1	5
2. I record my blood sugar levels regularly	1	4	3	5	1	4	1	4	1	5	1	5	3	5	3	5	1	4	1	5
3. I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	2	5	3	5	1	4	1	4	1	4	1	4	2	5	3	5	1	5	1	5
4. I do regular physical activity to achieve optimal blood sugar levels.	1	4	3	5	1	4	1	4	1	5	1	5	3	4	3	4	2	5	1	5
5. I keep all doctors' appointments recommended for diabetes management (PCP, Endocrinologist, Ophthalmologist, Podiatrist).	4	5	3	5	1	5	1	5	5	5	2	5	2	5	2	5	1	5	1	5
6. Knowledge on 7 Self-Care Behaviors of DSM:																				
1. Healthy Eating	2	4	3	5	2	5	2	5	2	5	2	4	3	4	4	5	2	5	2	5
2. Being Active	3	5	3	5	3	5	3	5	3	5	3	5	3	5	4	5	2	5	2	5
3. Taking Medication	2	5	4	5	2	5	2	5	2	5	2	5	3	4	4	5	2	4	2	5
4. Healthy Coping	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5
5. Problem Solving	1	5	2	5	1	5	1	5	1	4	1	5	3	5	3	5	1	4	1	5
6. Reducing Risks or Complications	2	4	3	5	2	5	2	5	1	5	2	5	2	5	3	5	1	5	2	5
7. Monitoring Blood Sugar	2	5	4	5	2	5	3	5	3	5	2	5	4	5	4	5	1	4	2	5
AVERAGE SCORE	1.83	4.58	2.92	5.00	1.50	4.67	1.58	4.67	1.83	4.83	1.58	4.83	2.67	4.75	3.08	4.92	1.33	4.58	1.42	5.00
% Increase	60.00%		41.67%		67.86%		66.07%		62.07%		67.24%		43.86%		37.29%		70.91%		71.67%	
REMARKS	I		I		I		I		I		I		I		I		I		I	

The Pre (Week 1) and Post (Week 8) DSM Survey of Participants DSM Practices in Table 2, shows that after the eight (8) weeks of intervention, Participants (P1, P2, P3, P4, P5, P6, P9, and P10) have increased their practice knowledge by more than 50% in regards to blood sugar checking, blood sugar results recording, adherence to dietary recommendations, engagement in physical activity, and adherence to the doctors' appointments. On the other hand, participants (P7 and P8) have increased practice knowledge on engagement in physical activity by only 33.33%.

Participants P2, P3, P4, P6, P7, P8, P9, and P10 knowledge of being adherent to the doctors' appointments have increased by more than 50%. Participant (P1) knowledge has only increased by 25% and Participant (P5) knowledge has not increase at all (0%).

Table 2. Pre (Week 1) and Post (Week 8) DSM Survey on Participants DSM Practices

QUESTIONS	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc
1. I check my blood sugar levels regularly with care and attention.	300.00%	66.67%	300.00%	300.00%	400.00%	400.00%	66.67%	66.67%	300.00%	400.00%
2. I record my blood sugar levels regularly	300.00%	66.67%	300.00%	300.00%	400.00%	400.00%	66.67%	66.67%	300.00%	400.00%
3. I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	150.00%	66.67%	300.00%	300.00%	300.00%	300.00%	150.00%	66.67%	400.00%	400.00%
4. I do regular physical activity to achieve optimal blood sugar levels.	300.00%	66.67%	300.00%	300.00%	400.00%	400.00%	33.33%	33.33%	150.00%	400.00%
5. I keep all doctors' appointments recommended for diabetes management (PCP, Endocrinologist, Ophthalmologist, Podiatrist).	25.00%	66.67%	400.00%	400.00%	0.00%	150.00%	150.00%	150.00%	400.00%	400.00%

In Table 3, the Pre (Week 1) and Post (Week 8) DSM Survey on Participants Self Care

Behaviors shows that after the eight (8) weeks of intervention, participants' self-care behaviors

have increased by 50% in at least two (2) of the following areas: healthy eating, being active,

taking medications, healthy coping, problem-solving, reducing risks or complications, and

monitoring blood sugar.

All the participant's self-care behaviors were increased in all areas, except for

participants P2, P7, and P8. Participant P2 has increased his behavior in taking his medication

and monitoring his blood sugar by only 25%, Participant P7 has increased his behavior in eating

healthy foods and taking his medication by 33% and monitoring his blood sugar by 25% and

Participant P8 has increased his behavior in eating healthy foods, being active, taking his

medication, and monitoring his blood sugar by 25%.

Table 3. Pre (Week 1) and Post (Week 8) DSM Survey on Participants Self Care Behaviors

QUESTIONS	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
	% Inc	% Inc	%Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc
Healthy Eating	100.00%	66.67%	150.00%	150.00%	150.00%	100.00%	**33.33%**	**25.00%**	150.00%	150.00%
Being Active	66.67%	66.67%	66.67%	66.67%	66.67%	66.67%	66.67%	**25.00%**	150.00%	150.00%
Taking Medication	150.00%	**25.00%**	150.00%	150.00%	150.00%	150.00%	**33.33%**	**25.00%**	100.00%	150.00%
Healthy Coping	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%
Problem Solving	400.00%	150.00%	400.00%	400.00%	300.00%	400.00%	66.67%	66.67%	300.00%	400.00%
Reducing Risks or Complications	100.00%	66.67%	150.00%	150.00%	400.00%	150.00%	150.00%	66.67%	400.00%	150.00%
Monitoring Blood Sugar	150.00%	**25.00%**	150.00%	66.67%	66.67%	150.00%	**25.00%**	**25.00%**	300.00%	150.00%

The average scores of the participants during the pre-survey (Week 1) were less than four

(<4) points. Also, in the pre-survey, Table 4 shows that most of the participants have a close

follow-up with their PCP, endocrinologist, ophthalmologist, and podiatrist within the past year,

except for participant number 3. After eight weeks of intervention, they become knowledgeable

and adherent to doctors' appointments.

Table 4. Close Follow-up of Patients to Their PCP, Endocrinologist, Ophthalmologist, and Podiatrist

FOLLOW - UP	P1			P2			P3			P4			P5		
	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8
PCP	Oct-21	Feb-22	**Feb-22**	Dec-21	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Dec-21	Feb-22	**Feb-22**	Nov-21	Feb-22	Feb-22
Endocrinologist	Oct-21	Oct-21	**Oct-21**	Dec-21	Dec-21	**Dec-21**	N	Feb-22	**Feb-22**	Dec-21	Dec-21	**Dec-21**	Nov-21	Nov-21	**Nov-21**
Ophthalmologist	Oct-21	Oct-21	**Oct-21**	Dec-21	Dec-21	**Dec-21**	N	Feb-22	**Feb-22**	Dec-21	Dec-21	**Dec-21**	Nov-21	Nov-21	**Nov-21**
Podiatrist	Oct-21	Oct-21	**Oct-21**	Dec-21	Dec-21	**Dec-21**	N	Feb-22	**Feb-22**	Dec-21	Dec-21	**Dec-21**	Nov-21	Nov-21	**Nov-21**

FOLLOW - UP	P6			P7			P8			P9			P10		
	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8
PCP	Nov-21	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Aug-21	Feb-22	**Feb-22**	Sep-21	Feb-22	**Feb-22**
Endocrinologist	Nov-21	Nov-21	**Nov-21**	N	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Aug-21	Feb-22	**Feb-22**	Sep-21	Feb-22	**Feb-22**
Ophthalmologist	Nov-21	Nov-21	**Nov-21**	N	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Aug-21	Feb-22	**Feb-22**	Sep-21	Feb-22	**Feb-22**
Podiatrist	Nov-21	Nov-21	**Nov-21**	N	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Aug-21	Feb-22	**Feb-22**	Sep-21	Feb-22	**Feb-22**

In the eight (8) weeks of intervention, Figure 2 shows that the participants have decreased more than five (5) lbs of their weight. Participant 1 lost 8lbs, Participant 2 lost 8lbs, Participant 3 lost 13lbs, Participant 4 lost 12lbs, Participant 5 lost 8lbs, Participant 6 lost 9lbs, Participant 7 lost 12lbs, Participant 8 lost 7lbs, Participant 9 lost 8lbs, and Participant 10 lost 14lbs.
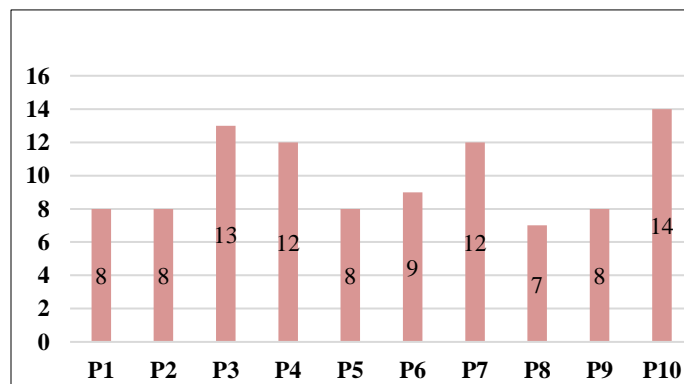

Figure 2. Weight (lbs) Difference of Patients after 8 weeks

Figure 3 shows the percent (%) increase in the knowledge of the participants on the topics discussed on how they can self-manage their diabetes from the 1st week to the 8th week of intervention. Participant 1 knowledge of self-managing his diabetes was increased to 55.38%. For Participant 2, 3, 4, 5, 6, 7, 8, 9, and 10, their knowledge was increase to 48.48%, 40.58%, 52.24%, 43.48%, 38.36%, 50%, 38.36%, 48.48%, and 71.19%, respectively.
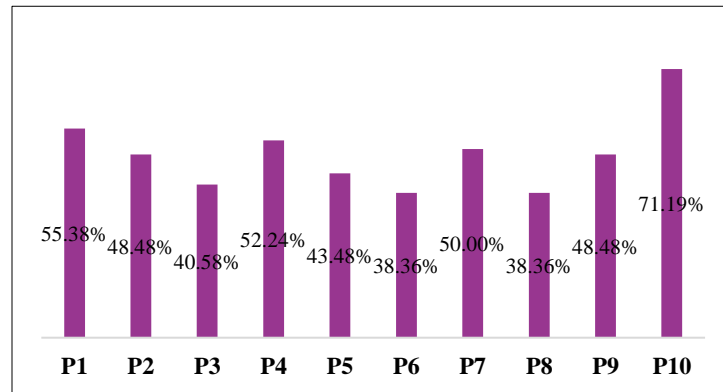

Figure 3. Percent (%) Increase in Knowledge of Patients on Discussed Topics after 8 Weeks

Conclusion

The intervention of educational presentations, diabetes support groups and individual counseling for 8 weeks have increased the knowledge of the eight (8) out of ten (10) patients with uncontrolled type 2 Diabetes Mellitus (T2DM) by 50% with regard to blood sugar checking, blood sugar results recording, and adherence to dietary recommendations.

Seven (7) out of 10 participants have increased their knowledge by 50% with regards to the areas of healthy eating, being active, taking medications, healthy coping, problem-solving, reducing risks or complications, and monitoring blood sugar. All of the participants' weight also improved.

Limitations

A number of limitations and barriers were presented during the implementation and evaluation phases of this DNP project. The small sample size of the population studied was

mainly specific for those with uncontrolled diabetes (HbA1c >7%) patients at the DSPCC who

consented to be in the project. Regardless of age and sex, ten (10) to Fifteen (15) patients were

the proposed minimum target; however, only a maximum of thirteen (13) patients consented and

only 10 patients were able to complete the whole program since three (3) patients contracted

COVID19 and had to be in isolation in the middle of the project implementation. Furthermore,

due to the small sample size, statistical analysis was not applied in this DNP project.

Moreover, although there is available research regarding DSME, further research needs

to be conducted for consistent program implementation and standardization in practice. In

addition, in order to get a more accurate HbA1c reading, it is recommended that HbA1c be

rechecked after twelve (12) weeks. The ADA recommends levels of HbA1c should be measured

every six (6) months in stable diabetic patients and in patients who have glucose fluctuations or

those patients who had treatment/management modifications (Eyth & Naik, 2020). However, due

to time constraints and this projected being a quality improvement project, the HbA1c was not

measured on this project.

Follow-up phone calls also became rather a challenge in the sense that each patient was

given an estimated timeframe to when they were going to be called every Tuesday; however, not

everyone was able to answer their phones right away. This DNP author had to retry again after

an hour and that has somewhat delayed the time allotted for phone calls for individual

counseling. It is also a limitation that patient concerns raised at the time of the phone call were

the only ones addressed even if they were advised to list their concerns for the week, therefore,

topics or concerns were not comprehensive. But if generalized, most concerns of the participants

were mainly based on the behavioral aspect where they voiced out their difficulty of following

through the program had it not with consistent follow-ups. Some of them consider their day-to-

day life busyness becoming a hindrance to their success of managing their uncontrolled diabetes

better than prior to their involvement in this project. Also, some patients verbalized they were

motor learners and preferred in-person meetings over individual counseling through phone calls.

Project Implications and Benefits

This DNP project has the potential for quality improvement to allow diabetic patients to

recognize what they can do to improve their diabetes, determine danger signs, seek help, or

undergo self-care to elevate their quality of life. With this, healthcare and hospitalization costs

from diabetes complications will be minimized. This DNP project would also enhance the

knowledge of diabetes and improve self-management behaviors, medication adherence, self-

efficacy, and quality of life of patients with uncontrolled diabetes.

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Appendix A

UNIVERSITY OF SAN FRANCISCO | **School of Nursing and Health Professions**

DNP Statement of Non-Research Determination Form

Student Name: Maria Hannah Mandecote

Title of Project:	A Pilot Study Using a Bundle in Improving Diabetes Self-Management Education (DSME) Among Patients with Uncontrolled Type 2 Diabetes Mellitus (T2DM)

Brief Description of Project:

The purpose of this DNP project is to initiate Diabetes Wellness for patients with uncontrolled diabetes in Davis Street Primary Care Clinic (DSPCC) through the introduction of Diabetes Self-Management (DSM) consisting of educational presentations, diabetes support group meetings, and individualized counseling to enhance participants' knowledge and practice on diabetes self-management.

A. Aim Statement:

In the duration of eight (8) weeks, participants with uncontrolled diabetes at the Davis Street Primary Care Clinic (DSPCC) in Alameda County will have increased knowledge and practice on Diabetes Self-Management and decreased weight measurements

B. Description of Intervention:

Educational presentations, weekly diabetes support group meetings, and individual counseling will be provided to patients with uncontrolled diabetes at the Davis Street Primary Care Clinic in Alameda County. The project interventions will be accomplished as follows:

Week 0. Patients determined to have HbA1C >7 the past year who verbally agreed to be part of this project will be invited to be in the clinic for 8 weeks every Friday for educational presentations (Weeks 1 & 2), and diabetes support group meetings (Weeks 3 to 8).

Week 1 (Friday) In-Person Meeting. Free breakfast will be provided to participants. Signed written consent will be obtained before the DSM pre-survey is filled. Data collection will start during the DSM pre-survey which will include: DSM knowledge and practice using a questionnaire answerable with a Likert scale with their current weight. Week 1 Education Presentation Outline will include: (a) General information on Diabetes; (b) Being Active: Habit of exercising; Types of exercise; Frequency of exercising; (c) Healthy Eating: Intake of fiber; Intake of fat and cholesterol, high oil, sodium and dessert; (d) Taking Medication: Cooperation and obedience of medication; Knowledge of Insulin Injection; (e) Healthy Coping: Reasons of pressure; Ways to relieve pressure; (f) Wrap-up and open forum. Patients will have the chance to ask questions and make suggestions.

Week 2 (Tuesday) Telephone Individual Counselling. Patients will be called over the phone for follow-up/any queries. Follow-up will include whether the patient is: (a) Being Active: Monitoring daily exercise records; Encouraging sufficient exercise PRN; (b) Healthy Eating: Monitoring daily food intake records; Providing adequate dietary knowledge and adjustment support PRN; (c) Taking Medication: Monitoring daily PO medication and daily insulin

injection records; Enhancing the skill of insulin injection and medication obedience PRN; (d) Healthy Coping: Providing support PRN.

Week 2 (Friday) In-Person Meeting. Free breakfast will be provided to participants. Week 2 Education Presentation Outline will include: (a) Addressing questions from previous week's topics; (b) Problem Solving: Frequency of hypo/hyperglycemia; Ways to treat hypo/hyperglycemia; (c) Reducing Risks: Habits of smoking; Foot Care; Diabetes complication evaluation; (d)Monitoring: Knowledge of self-monitoring of blood glucose (SMBG); Method of performing, frequency, recording of SMBG; Reason of not performing SMBG; (e) Wrap-up and open forum. Patients will have the chance to ask questions and make suggestions

Week 3 (Tuesday) Telephone Individual Counselling. Patients will be called over the phone for follow-up/any queries. Follow-up will include whether the participant needs assistance or clarification with 7 DSM Behaviors introduced to them on the first 2 Fridays.

Weeks 3 to 8 (Fridays) In-Person Meeting. Participants will meet for a weekly Diabetes Support Group where they can engage actively with the group. The plan is to continue to provide free breakfast, do some exercises, follow up with how the group is doing with DSM looking closely at their meal planning/logs, medications issues, blood glucose monitoring, etc.

Week 4 (Friday) In-Person Meeting. In addition to weekly diabetes support group meetings, the plan this week is to have participants answer the DSM Post-Survey # 1 Questionnaire. DSM Post-survey includes DSM knowledge and practice using a questionnaire answerable with a Likert scale. Data collected from DSM Post-Survey #1 will be compared from DSM Pre-survey.

Week 8 (Friday) In-Person Meeting. In addition to the weekly diabetes support group meeting, the plan this week is to have participants answer the DSM Post-Survey # 2 Questionnaire. DSM Post-survey includes DSM knowledge and practice using a questionnaire answerable with a Likert scale with their current weight. The outcomes will be evaluated by comparing the pre-survey and post-survey data on the 4th and 8th weeks.

C. How will this intervention change practice:

This intervention will have the potential for quality improvement to allow diabetic patients to recognize what they can do to improve their diabetes, determine danger signs, seek help, or undergo self-care to elevate their quality of life. With this, healthcare costs from diabetes complications will be minimized. This intervention will enhance their diabetes knowledge and improve self-management behaviors, medication adherence, self-efficacy, and quality of life.

D. Outcome measurements:

The outcomes will be evaluated by using several metrics. The Diabetes Self-Management (DSM) pre-survey (1st week) and post-survey (8th week) includes a 5-item questionnaire on the DSM. This is followed by a 7-item questionnaire that inquires on the Seven (7) Self-Care Behaviors of DSM which includes healthy eating, being active, taking medications, healthy coping, problem-solving, reducing risks or complications and monitoring blood sugar. The average score is 3 points, which will be compared post-survey to see if there is an improvement if the score is >3 points. The weight will be obtained before the educational session (1st week) and obtained on the 8th week of intervention. These will be compared to determine if there is an improvement. Also, on the pre-survey, the questionnaire, weight, as well as whether participants have a close follow-up with their PCP, endocrinologist, ophthalmologist or podiatrist within the past year.

On the 1st and 2nd week, knowledge regarding topics discussed will be measured through a 10-item Pre-test and Post-test. On the other hand, to continuously assess the participants' knowledge regarding topics previously discussed, a 14-items (2 items each behavior) Pre-test and Post-test every diabetes support group meeting (weeks 3 to 8) will be obtained from the participants. In addition, to evaluate the competency/practice of blood glucose monitoring and insulin administration, a teach-back show-me method will be done in each in-person meeting. Compliance with follow-up with PCP and referrals will be closely monitored/logged by this writer.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

☐ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST

Instructions: Answer YES or NO to each of the following statements:

Project Title: A Pilot Study Using a Bundle in Improving Diabetes Self-Management Education (DSME) Among Patients with Uncontrolled Type 2 Diabetes Mellitus (T2DM)	YES	NO
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	YES	
The specific aim is to improve performance on a specific service or program and **is a part of usual care**. ALL participants will receive standard of care.	YES	
The project is **NOT** designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does **NOT** follow a protocol that overrides clinical decision-making.	YES	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does **NOT** develop paradigms or untested methods or new untested standards.	YES	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does **NOT** seek to test an intervention that is beyond current science and experience.	YES	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	YES	
The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	YES	

The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., **not** a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	**YES**	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: "*This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board.*"	**YES**	

ANSWER KEY: If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

STUDENT NAME (Please print):
Maria Hannah Mandecote

Signature of Student:

Date:
02/18/2022

SUPERVISING FACULTY MEMBER (CHAIR) NAME (Please print):
Dr. Jodie Sandhu

Signature of Supervising Faculty Member (Chair):

Prabjot K Sandhu <pksandhu@usfca.edu>   Thu, Mar 10, 11:05 AM
to me

OK here you are Hannah. Ready to go.

Review attached.

Kindly,

Prabjot (Jodie) Sandhu DNP, FNP-C, PA-C, CNL
Chair of Graduate Nursing Department
Assistant Professor
University of San Francisco
School of Nursing and Health Professions

Appendix B

DAVIS STREET

Davis Street Primary Care Clinic
3081 Teagarden Street,
San Leandro, CA 94577

02/22/2022

To Whom It May Concern,

Please note that Ms. Maria Hannah Mandecote, USF DNP-FNP student, has been given permission to conduct her DNP project "A Pilot Study Using a Bundle in Improving Diabetes Self-Management Education (DSME) Among Patients with Uncontrolled Type 2 Diabetes Mellitus (T2DM)" at our clinic, the Davis Street Primary Care Clinic for four (4) weeks.

Ms. Mandecote is allowed to enter our building on regular clinic days to work on her project whenever she deemed necessary and will be provided assistance by the clinic staff as long as it does not interfere with the workflow of our clinic.

If there are any questions, please contact my office.

Sincerely,

Dr. Carole Alvarez, CPO

Appendix C

Diabetes Self-Management Education

Davis Street Primary Care Clinic would like to invite you to our Diabetic Wellness Group to be held on some Fridays at 9:30AM at the clinic!

We will provide breakfast and discuss health and ways in managing your diabetes.

Please let us know if you are able to attend by calling **Hannah at 415-688-9376.**

We Look forward to seeing you and starting an improved healthy lifestyle adventure!

Appendix D

Informed Consent

TITLE OF STUDY
Improving Diabetes Self-Management (DSM) Among Patients with Uncontrolled Type 2
Diabetes Mellitus (T2DM): A Patient-Centered Education Model

PRINCIPAL INVESTIGATOR
Maria Hannah Mandecote, DNP-FNP Student
University of San Francisco School of Nursing and Health Professions
2130 Fulton St, San Francisco, CA 94117
415-688-9376
mtmandecote@usfca.edu

PURPOSE OF STUDY
You are being asked to take part in a research study. Before you decide to participate in
this study, it is important that you understand why the research is being done and what it
will involve. Please read the following information carefully. Please ask the researcher if
there is anything that is not clear or if you need more information.

The purpose of this study is to initiate Diabetes Wellness for patients with uncontrolled
diabetes in Davis Street Primary Care Clinic (DSPCC) through the introduction of
Diabetes Self-Management (DSM) consisting of educational presentations, diabetes
support group meetings, and individualized counseling to enhance participants'
knowledge and practice on diabetes self-management.

This project aims to increase knowledge by 50% on the following: blood glucose
checking and recording, adherence to dietary recommendations, engagement in physical
activity, and adherence to medical appointments. This project also aims to increase self-
care behaviors by 50% in at least two (2) of the following areas: healthy eating, staying
active, taking medications, healthy coping, problem-solving, risk or complication
reduction and blood glucose monitoring. In addition, the goals of this DNP project also
include: decreasing participants' weight by at least five (5) pounds, decreasing
participants' glycosylated hemoglobin (HbA1c), and improving fasting and postprandial
blood glucose measurements within eight (8) weeks.

STUDY PROCEDURES
Week 1 (Friday) In-Person Meeting. Free breakfast will be provided to participants.
Signed written consent will be obtained before the DSM pre-survey is filled. Data
collection will start during the DSM pre-survey which will include: DSM knowledge and
practice using a questionnaire answerable with a Likert scale, weight, and HbA1c levels
(to follow after initial HbA1c lab is drawn this day and results become available). Week 1
Education Presentation Outline will include: (a) General information on Diabetes; (b)
Being Active: Habit of exercising; Types of exercise; Frequency of exercising; (c)
Healthy Eating: Intake of fiber; Intake of fat and cholesterol, high oil, sodium and
dessert; (d) Taking Medication: Cooperation and obedience of medication; Knowledge of
Insulin Injection; (e) Healthy Coping: Reasons of pressure; Ways to relieve pressure; (f)
Wrap-up and open forum. Patients will have the chance to ask questions and make
suggestions.

Participant's Initials: _____

Informed Consent

Week 2 (Tuesday) Telephone Individual Counselling. Patients will be called over the phone for follow-up/any queries. Follow-up will include whether the patient is: (a) Being Active: Monitoring daily exercise records; Encouraging sufficient exercise PRN; (b) Healthy Eating: Monitoring daily food intake records; Providing adequate dietary knowledge and adjustment support PRN; (c) Taking Medication: Monitoring daily PO medication and daily insulin injection records; Enhancing the skill of insulin injection and medication obedience PRN; (d) Healthy Coping: Providing support PRN.

Week 2 (Friday) In-Person Meeting. Free breakfast will be provided to participants. Week 2 Education Presentation Outline will include: (a) Addressing questions from previous week's topics; (b) Problem Solving: Frequency of hypo/hyperglycemia; Ways to treat hypo/hyperglycemia; (c) Reducing Risks: Habits of smoking; Foot Care; Diabetes complication evaluation; (d)Monitoring: Knowledge of self-monitoring of blood glucose (SMBG); Method of performing, frequency, recording of SMBG; Reason of not performing SMBG; (e) Wrap-up and open forum. Patients will have the chance to ask questions and make suggestions

Week 3 (Tuesday) Telephone Individual Counselling. Patients will be called over the phone for follow-up/any queries. Follow-up will include whether the participant needs assistance or clarification with 7 DSM Behaviors introduced to them on the first 2 Fridays.

Weeks 3 to 8 (Fridays) In-Person Meeting. Participants will meet for a weekly Diabetes Support Group where they can engage actively with the group. The plan is to continue to provide free breakfast, do some exercises, follow up with how the group is doing with DSM looking closely at their meal planning/logs, medications issues, blood glucose monitoring, etc.

Week 4 (Friday) In-Person Meeting. In addition to weekly diabetes support group meetings, the plan this week is to have participants answer the DSM Post-Survey # 1 Questionnaire. DSM Post-survey includes DSM knowledge and practice using a questionnaire answerable with a Likert scale. Data collected from DSM Post-Survey #1 will be compared from DSM Pre-survey.

Week 8 (Friday) In-Person Meeting. In addition to the weekly diabetes support group meeting, the plan this week is to have participants answer the DSM Post-Survey # 2 Questionnaire. DSM Post-survey includes DSM knowledge and practice using a questionnaire answerable with a Likert scale weight and HbA1c. The outcomes will be evaluated by comparing the pre-survey and post-survey data on the 4th and 8th weeks.

RISKS
You may decline to answer any or all questions and you may terminate your involvement at any time if you choose.

BENEFITS

Page **2** of **3**
Participant's Initials: _____

Informed Consent

This DNP project will have the potential for change of practice to allow diabetic patients to recognize what you can do to improve your diabetes, determine danger signs, seek help, or undergo self-care to elevate your quality of life. With this, healthcare costs from diabetes complications will be minimized. This DNP project will also enhance diabetes knowledge and improve self-management behaviors, medication adherence, self-efficacy, and quality of life.

CONFIDENTIALITY
For the purpose of this DNP project, your responses to this [survey and study] will be anonymous. Every effort will be made by the researcher to preserve your confidentiality including the following:

Listed below are the measures taken to ensure confidentiality:
- Assigning code names/numbers for participants that will be used on all research notes and documents.
- Keeping notes and any other identifying participant information in a locked file cabinet in the personal possession of the researcher.

COMPENSATION
Participants of this study will receive a free breakfast meal every in-person meeting.

CONTACT INFORMATION
If you have questions at any time about this study, or you experience adverse effects as a result of participating in this study, you may contact the researcher whose contact information is provided on the first page.

VOLUNTARY PARTICIPATION
Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

CONSENT
I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

Page **3** of **3**
Participant's Initials: _____

Appendix E

DAVIS STREET

Davis Street Primary Care Clinic
Diabetes Self-Management - Pre-Survey

Name: _____   **Date:** _____

The following pre-survey is intended to initially assess the individual's self-care activities related to Diabetes Self-Management (DSM). Read each statement in the survey and mark the response that most closely applies to you.

1. I check my blood sugar levels regularly with care and attention. ☐ Blood sugar measurement is not required as a part of my treatment.	Never 1	2	Sometimes 3	4	Always 5
2. I record my blood sugar levels regularly	Never 1	2	Sometimes 3	4	Always 5
3. I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	Never 1	2	Sometimes 3	4	Always 5
4. I do regular physical activity to achieve optimal blood sugar levels.	Never 1	2	Sometimes 3	4	Always 5
5. I keep all doctors' appointments recommended for diabetes management (PCP, Endocrinologist, Ophthalmologist, Podiatrist).	Never 1	2	Sometimes 3	4	Always 5
6. Knowledge on 7 Self-Care Behaviors of DSM: 　1.　Healthy Eating 　2.　Being Active 　3.　Taking Medication 　4.　Healthy Coping 　5.　Problem Solving 　6.　Reducing Risks or Complications 　7.　Monitoring Blood Sugar	No 1 1 1 1 1 1 1	2 2 2 2 2 2 2	Average 3 3 3 3 3 3 3	4 4 4 4 4 4 4	High 5 5 5 5 5 5 5

Today's Weight: _____
Today's Hemoglobin A1c: _____
Recent Referral/Date: PCP _____ Endoc _____ Ophthalmologist _____ Podiatrist _____

Appendix F

DAVIS STREET

Davis Street Primary Care Clinic
Diabetes Self-Management Assessment Questionnaire

Name: _____ Sex: _____ DOB: _____ Today's Date: _____
Primary Care Provider: _____

I. SMOKING
    a) Do you smoke? Y___ N___
    b) If so, how many packs per day? ____

II. REFERRAL
    a) Has your Primary Care Provider (PCP) referred you to an Endocrinologist (Diabetes Specialist) in the past?
       Y___ N___
    b) Have you visited an Endocrinologist since your last visit to the clinic? Y___ N___
    c) Please enter the approximate month and year of your last visit to the endocrinologist.
       Month ___ Year____

III. EYE EXAMS
    a) Has it been more than a year since you have visited an eye doctor? Y___ N___
    b) Have you visited an eye doctor since your last visit to the clinic? Y___ N___
    c) Please enter the approximate month and year of your last visit to the eye doctor.
       Month ___ Year____

IV. FOOT EXAMS
    a) Has it been more than a year since you have visited a foot doctor? Y___ N___
    b) Have you visited a foot doctor since your last visit to the clinic? Y___ N___
    c) Please enter the approximate month and year of your last visit to the eye doctor.
       Month ___ Year____

V. SELF-MANAGEMENT
    a) Do you recall your latest HbA1c? Y___ N___. If so, what was it? _____mg/dL
    b) Do you check your blood sugar? Y___ N___ If so, how often? ___ a day, ___ a week, ____ a month
    c) Do you exercise? Y___ N___
       1) Type: Aerobic _____ Strength Training ___ Stretching ___ Balance (Yoga/Tai-chi) ___ Other: ___
       2) How long (in minutes per week) _____
       3) Do you see yourself using a pedometer to discover how active you are? Y___ N___
    d) Have you been following a diabetic diet? Y___ N___
    e) Have you been taking your prescription medications? Y___ N___

f) Please list your prescription medications as you remembered:
   (Name/Dose/Frequency)
   1)
   2)
   3)
   4)
   5)
   6)

Appendix G

DAVIS STREET

Davis Street Primary Care Clinic
Week 1 Pre-Test/Post-Test

Name: _____   Date: _____

Read the question carefully and encircle the letter of the correct answer.

1. Diabetes Mellitus is defined as:
   a. Too much insulin, a hormone, in the bloodstream
   b. Too much sugar or glucose in the bloodstream
   c. Weighing too much

2. Type 2 diabetes:
   a. Is the most common form of diabetes worldwide
   b. Is strongly familial and has multiple causes
   c. Has a range of treatments that includes: following a diet and getting more exercise, using one or more kinds of oral medicine, and being treated with insulin
   d. A and B only
   e. B and C only
   f. All of the above

3. Blood sugar level can be lowered with:
   a. Medications including insulin
   b. Carbohydrate controlled diet
   c. Weight loss
   d. All of the above

4. There is a risk of hypoglycemia (low blood sugar) when using insulin therapy or oral medication that causes insulin to be released from the pancreas.
   a. True
   b. False

5. With Type 2 Diabetes, your blood sugar may increase when you are:
   a. Active and losing weight
   b. Eating too much sugar and starchy foods including fruits, juice or milk
   c. Taking the wrong dose of medication or insulin
   d. B and C only
   e. All of the Above

6. Diabetic Ketoacidosis (DKA) is a life-threatening emergency and requires immediate medical attention that can affect people with both Type 1 and Type 2 Diabetes.
   a. True
   b. False

7. Type 2 Diabetes Mellitus can be managed by:
   a. Lifestyle changes such as a healthy diet and exercise
   b. Weight management
   a. Routine follow-up with your Doctor, Endocrinologist, Podiatrist, Ophthalmologist
   b. A and C only
   c. All of the above

8. If you have Type 2 Diabetes and are treated with medicine,
   a. You will be on that same medication for the rest of your life
   b. Your medication may change over time
   c. A very effective lifestyle change may help you go off medications all together.
   d. A and C only
   e. B and C only
   f. All of the above.

9. If you have Type 2 Diabetes and are treated with insulin, you may have Hypoglycemia (low blood sugar reaction) when you:
   a. Delay eating after taking mealtime insulin
   b. Do not exercise or increase your daily activity level
   c. Are on the wrong dose of insulin
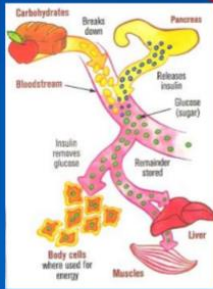   d. A and B only
   e. A and C only
   f. All of the above

10. If you take insulin or oral diabetes medication that stimulates your pancreas to release insulin, drinking alcohol places you at a HIGHER risk of having low blood sugars.
    a. True
    b. False

Appendix H

Classification

1) Type 1 – Juvenile Diabetes / T1DM
2) Type 2 – T2DM
3) Gestational diabetes
4) Prediabetes

Currently, at least 1 out of 3 people will develop the disease in their lifetime

3) Gestational Diabetes

- Onset: second-half of pregnancy
- Reclassified as Type 2 if it persists beyond pregnancy
- Giving birth to a >9lb baby

Gestational Diabetes

High blood glucose levels in mother

Brings extra glucose to baby

Causes baby to put on extra weight

*A.D.A.M.

1) Type 1 - Juvenile Diabetes

In adults, type 1 diabetes accounts for approximately
5%
of all diagnosed cases of diabetes

- Insulin-producing pancreatic (β) cells are destroyed (autoimmune)
  – Absolute insulin deficiency
  – Daily insulin replacement necessary
- Age of onset: Bimodal
  – (4 to 6yo) and
  – (10 to 14yo)

4) Prediabetes

- Blood glucose is higher than normal but is not high enough to be called diabetes.

2) Type 2 – T2DM

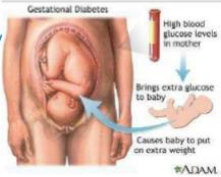- D/t progressive loss of insulin secretion from the pancreatic (β) cells superimposed on a background of insulin resistance, resulting in relative insulin deficiency

In adults, type 2 diabetes accounts for approximately
90-95%
of all diagnosed cases of diabetes

Risk Factors:

Type 1
- Age (child, teen, YA)
- 1st Degree Family Hx
- Presence of damaging immune system cells (autoantibodies)
- White Race

Gestational
- > 25yo
- GDM Hx from previous pregnancy
- Had a >9lb baby
- 1st Degree Family Hx
- PCOS Hx

Type 2
- ≥ 45yo
- Overweight/Obesity
- Sedentary Lifestyle
- Prediabetes
- 1st Degree Family Hx
- GDM Hx
- Non-alcoholic fatty liver disease Hx
- HTN, CVD Hx
- Cholesterolemia, HLD Hx

Prediabetes
- Overweight
- ≥ 45yo
- 1st Degree Family Hx
- Sedentary Lifestyle
- GDM Hx or >9lb baby

Diabetes Secondary to Other Factors

- Hormonal excess
  - Cushing Syndrome
- Medication-induced
  - Corticosteroids, protease inhibitors, atypical antipsychotics, HCTZ, tacrolimus
- Insulin receptor unavailability
- Pancreatic disease
- Genetic syndromes
- Gestational diabetes

Late Symptoms

- Retinopathy
- Nephropathy
- Neuropathy
  - Orthostatic hypotension
  - Delayed gastric emptying
  - Erectile dysfunction
- Macrovascular Disease
  - Transient ischemic attacks (TIA)
  - Myocardial infarction (MI)
  - Peripheral arterial disease (PAD)
- Other Complications
  - Diabetic foot complications
  - Musculoskeletal disorders
  - Dermatologic disease
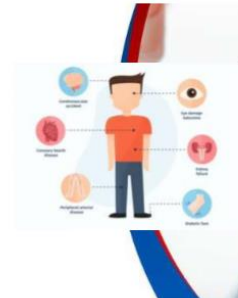
Prevention

- T1DM cannot be prevented
- T2DM
  - Healthy diet
    - Lower in fat and calories and higher in fiber
  - Physical activity
    - 30 mins moderate physical activity daily
  - Weight management/loss
    - Keep weight in healthy range

Diagnosis

- **History:** 3Ps, wt loss, weakness, fatigue, neuropathy, frequent yeast infections.
- **Physical Exam:** $\geq$ 30 BMI, waist circumference, eye exam, foot exam
- **Laboratory:**
  - HbA1c $\geq$ 6.5%,
  - Random BG $\geq$ 200mg/dL,
  - Fasting BG $\geq$ 126mg/dL,
  - OGTT $\geq$ 200mg/dL

Early Symptoms

3Ps of Diabetes
- Polydipsia
  excessive **thirst**
- Polyphagia
  excessive **hunger**
- Polyuria
  excessive **urination**

Treatments:

Type 1
- Insulin Therapy
  Long-acting,
  Intermediate,
  Short-acting,
  Rapid-acting

Type 2
- Lifestyle Therapy
- Monotherapy
- Dual Therapy
- Triple Therapy

Gestational
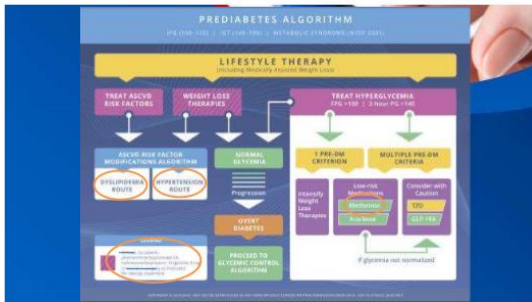- Lifestyle Therapy
- Insulin – first line
- PO antidiabetics – second line

Prediabetes
- Lifestyle Therapy
  - Wt loss
  - Healthy diet
  - Exercise

Acute Complications of Diabetes

Diabetic Ketoacidosis (DKA)
- Ill appearance
- Polyuria and polydipsia
- Nausea and vomiting
- Abdominal pain
- Kussmaul respiration
- Fruity breath
- Can progress to cerebral edema, coma, and death

Acute Complications of Diabetes

Hyperosmolar Hyperglycemic Syndrome (HHS)
- Altered consciousness
  - confusion or disorientation to coma
- Focal or generalized seizures
- Shallow and rapid breathing
- Profound dehydration

Follow-up Tests and Special Considerations

Type 2
- A1c twice a year (well-controlled BG) and quarterly (hyperglycemia or recent therapy change);
- Periodic monitoring of lipids, renal functions and urinary microalbumin

Complications of Uncontrolled Diabetes

Follow-up Tests and Special Considerations

Gestational
- Screen patients with history of GDM for persistent diabetes/prediabetes with OGTT 6 to 12 weeks' postpartum and every 3 years thereafter.

Diet
- Low carb low concentrated sweets diet
- Low in fat, calorie and high in fiber
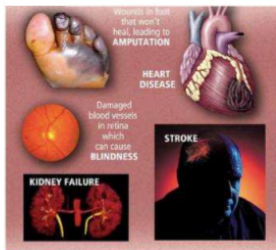
Follow-up Tests and Special Considerations

Type 1
- Regular aerobic exercise w/ care to avoid hypoglycemia
  - lower basal requirements (temporary basal rate if using an insulin pump), or
  - be advised to eat/drink 15–30 g of carbohydrates prior to vigorous exercise.
- BP checks with goal of <130/80mmHg
- Annual foot exam
- Quarterly HbA1c measurement
- Daily home blood sugar monitoring 4 to 6x daily

Referrals

- Diabetes Educator
- Dietitian
- Ophthalmologist
- Wound specialist
- Cardiologist/cardiovascular surgeon
- Endocrinologist

What is Diabetes Self Management Education?

➢ Provides information and skills for people to manage their diabetes and related conditions.

➢ Participating in a self-management education program can help you learn skills to manage your diabetes more effectively by checking blood sugar regularly, eating healthy food, being active, taking medicines as prescribed, and handling stress.

I. Being Active

American Association of Diabetes Educators 7 Self-Care Behaviors (AADE7)

Part 1 – Week 1
I. Being Active
II. Healthy Eating
III. Taking Medication
IV. Healthy Coping

Part 2 – Week 2
V. Problem-Solving
VI. Reducing Risks
VII. Monitoring

I. Being Active

I. Being Active

Problem
• Sedentary Lifestyle
• Less likely to exercise
• Energy is used just to survive
• Neighborhood not conducive to outside activities
• Live in the present, not goal-oriented
• Tend to choose pleasurable activities

I. Being Active

F Frequency
Regular (3x to 4x Per Week)

I Intensity
60-80% Of Maximal Heart Rate

T Time
Aerobic Activity
20-30 Min.
With 5-10 Min.
Warm Up

I. Being Active

- Exercise while watching TV or during commercial breaks
- Eat a snack before strenuous exercise
- Do not exercise if blood glucose is high or if ketones are in the urine
- Helps the body better regulate insulin
- Relieves stress
- Reduces risk for heart disease
- Lowers blood glucose and blood pressure
- Improves cholesterol level

II. Healthy Eating

Healthiest Proteins
- Fish or shellfish
- Skinless chicken or turkey
- Low-fat or fat-free dairy
  - skim milk, low-fat cheese
- Egg whites or egg substitutes
- Plant proteins
  - from beans, nuts, legumes, lentils or soyfoods like tofu or soymilk

Diabetes **Superfoods**

II. Healthy Eating

Problem
- On SNAP - Supplemental Nutrition Assistance Program
- Food deserts
- Often share food with other family members
- Food runs out at the end of the month
- Buying inexpensive unhealthy food
- Skip meals or water down drinks to stretch
- Healthy foods considered to be expensive to be expensive
- Often not willing to purchase (new) foods

II. Healthy Eating

Vegetables
- Broccoli, green beans, leafy greens, zucchini, cauliflower, cabbage, carrots, and tomatoes
- Low in calories
- High in fiber, vitamins, and minerals
- 3-5 servings per day (2 cups of vegetables)

II. Healthy Eating

- Use a smaller plate.
- **Flip your meals.**
  - Eating the biggest meal at mid-day for weight loss
- **Trade up.**
  - Eating quinoa instead of white rice or pasta.
  - Homemade over-processed foods.
- **Eat protein at every meal and snack.**
  - Making you full longer and craving fewer sweets and salty snacks.
- **Make water your habit.**
  - Increasing your water intake.
  - Drinking it before you eat can take the edge off, so you don't overdo it.
- **Know what you're eating.**
  - Keeping track of what you're actually putting in your mouth.

II. Healthy Eating

Fruits
- Eat 2-3 servings per day
- One fruit serving is equal to:
  - 1 medium apple, pear, or orange;
  - 1 small banana; or
  - 4 ounces of juice
- Whole fruits are the best choices because they contain fiber

II. Healthy Eating

Vegetables
- Broccoli, green beans, leafy greens, zucchini, cauliflower, cabbage, carrots, and tomatoes
- Low in calories
- High in fiber, vitamins, and minerals
- 3-5 servings per day (2 cups of vegetables)

III. Taking Medication

When taking Insulin
- Rotate injection sites (prevent lipohypertrophy) within one anatomic site (prevent day-to-day changes in absorption rates).
- Inject at a 90° angle (45° angle if thin). Aspiration for blood is not necessary.
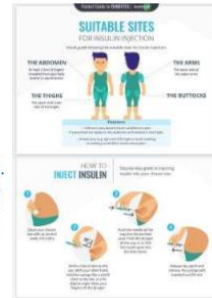
III. Taking Medication
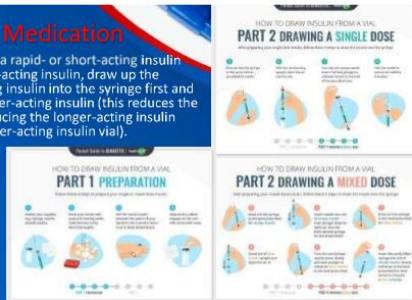
Problem
- Poor access
- Safety and affordability concerns
- Noncompliance with drug regimen
- Poor basic understanding of medication administration

III. Taking Medication
- When mixing a rapid- or short-acting insulin with a longer-acting insulin, draw up the shorter-acting insulin into the syringe first and then the longer-acting insulin (this reduces the risk of introducing the longer-acting insulin into the shorter-acting insulin vial).

III. Taking Medication

Goal
- Perform self-administration of insulin after teach-back method
- Provide additional instruction as indicated
- Eat at regular intervals, avoid alcohol intake, and adjust insulin to exercise and diet to avoid hypoglycemia.

III. Taking Medication

Insulin Storage:
- Refrigerate when not in use.
- Room temperature when in use.
- Use the vial for ONLY 30 days.
- Always inspect before usage.
- DO NOT USE if there is clumping, frosting, precipitation, and change in color.

IV. Healthy Coping

SIMPLE WEIGHT MANAGEMENT TIPS

IV. Healthy Coping

TRAVEL PLANNING

IV. Healthy Coping

RISKY LIFESTYLE CHOICES TO AVOID

IV. Healthy Coping

TRAVEL TIPS

IV. Healthy Coping

HOW TO FAST SAFELY

IV. Healthy Coping

Does Diabetes Cause DEPRESSION?
- The stress of daily diabetes care can build up and make you feel helpless.
- People with diabetes have at least twice the risk of developing depression than people without diabetes.
- Nerve damage and blocked blood vessels in the brain (diabetic complications) may affect brain chemistry and contribute to the development of depression.

IV. Healthy Coping

Does Depression Worsen Diabetes?

- People with depression are at higher risk for diabetes complications.
- If you are depressed, chances are you are tired and frustrated with your life.
  - Because you feel this way, you are less likely to take care of yourself very well and this can lead to poor blood glucose control.
- Depressed people with diabetes often have higher blood glucose levels.
- Taking care of diabetes is not just about controlling blood glucose but also about keeping your mind healthy.

Thank you. Questions?

IV. Healthy Coping

- Spot depression.
  - If you have diabetes and have been feeling down, check for symptoms of depression.
- Seek help.
  - Tell your doctor how you feel so that he/she can rule out medical causes of depression (thyroid problems, medication s/e)
  - Blood glucose levels that are too high or too low can also mimic symptoms of depression.
- If you are diagnosed with depression, your doctor will advise you on a suitable treatment plan that may include medications, lifestyle changes, and/or counselling.

IV. Healthy Coping

- Depression is treatable.

- Stay positive to beat both the blues and diabetes!

Appendix I

DAVIS STREET

Davis Street Primary Care Clinic
Week 2 Pre-Test/Post-Test

Name: _____ Date: _____

Read the question carefully and encircle the letter of the correct answer.

1. What is the most important thing you should do to prevent low blood sugar when drinking alcohol?
   a. Choose alcoholic beverages high in sugar
   b. Substitute alcohol for a meal instead
   c. Do not drink alcohol on an empty stomach. Always consume alcohol with a meal or snack that contains carbohydrates.

2. Mild symptoms of low blood glucose (hypoglycemia) are best treated with:
   a. Dextrose or glucose tablets
   b. Chicken or fish
   c. Cheese
   d. All of the above

3. The best way to know if your eyes are healthy, and have not been damaged by diabetes is:
   a. To go to an ophthalmologist for an eye exam every year, or more often, if recommended by your doctor
   b. If your vision is clear, your eyes are ok
   c. If your vision is blurry, you have diabetic damage

4. The American Diabetes Association recommends that people who have diabetes should maintain blood pressure levels less than:
   a. 140/90 mmHg
   b. 150/90 mmHg
   c. 160/100 mmHg

5. The benefits of exercise include:
   a. Improved insulin sensitivity
   b. Lowered risk of heart disease
   c. Reduced stress and enhanced quality of life
   d. All of the above

6. In general, aerobic activity will lower blood sugars, and the more vigorous the activity, the more likely it is that this will occur. On the other hand, many daily activities will also increase insulin sensitivity. Activities that may cause low blood sugar reactions to include:
   a. Gardening
   b. Shopping
   c. House cleaning
   d. Swimming
   e. All of the above

7. If you are taking insulin and/or pills that cause insulin to be released from the pancreas, there are several questions you should consider each time before starting exercise. These include:
   a. What is my blood sugar right now?
   b. Do I have a meter so that I can check my blood sugar during exercise?
   c. Do I have snacks nearby in case I need them?
   d. All of the above

8. If you have hypoglycemia (low blood sugar) during exercise, what would be an appropriate food choice?
   a. Diet soda
   b. Chocolate bar
   c. Dextrose tablets, banana or fruit juice
   d. Peanut butter, cheese, or nuts
   e. All of the above

9. Combining alcohol and exercise, such as when you go dancing and drinking, increases the risk of low blood sugar.
   a. True
   b. False

10. The health benefits of losing weight (if obese through diet and exercise include:
   a. Improved sensitivity to the action of insulin and improved blood sugar levels
   b. Lowered risk of developing heart disease, like heart attacks and stroke
   c. Prevention or delaying of serious health conditions, like breathing problems, joint and bone disorders
   d. All of the above.

Appendix J

V. Problem Solving

Step 2: Find Solutions

- Share any issues you are experiencing i.e. not being able to afford all your diabetes supplies or medications.
- Ask for ideas about new tools that could help.
- Having the right information can help you come up with the right solution for your problem.

VI. Reducing Risks

- Doing behaviors that minimize or prevent complications and negative outcomes of prediabetes and diabetes.

V. Problem Solving

Step 3: Take Action

- Choose how to solve the problem once you have options.
- Set a realistic action plan.
- Pick a solution that you can handle; get help if needed.
- Check to make sure your solution choice works.
- Try something different if one solution doesn't help.

VI. Reducing Risks

- Make positive lifestyle changes
- Participate in a T2DM prevention or DSME and support program,
- Get adequate sleep,
- Get recommended vaccines and health screenings.
- Acknowledge that preventive actions you can take now will benefit you years from now means you have the power to change your health outcomes.

V. Problem Solving

- Be patient with yourself.
- Follow-up to discuss how things went.
- Learn from previous choices and revise plans based on that information

Problem Solving Checklist

VI. Reducing Risks

1. Schedule regular medical check-ups
2. Get all of the recommended health checks
3. Take care of your feet
4. Get recommended vaccines
5. Don't smoke
6. Monitor your food, medications, exams, target levels and more
7. Learn the signs and symptoms of hypoglycemia
8. Understand the connection between heart disease and diabetes.
9. Talk about your feelings.

VI. Reducing Risks

1. **Schedule regular medical check-ups.**
   - Plan 3 month follow-up
   - HbA1c and BP check
2. **Get all of the recommended health checks**
   - Sleep apnea screening
   - Hearing loss screening
   - Dental exam
   - Eye exam
   - Kidney function screening
   - Get a cholesterol check

VI. Reducing Risks

6. **Monitor your food, medications, exams, target levels**
   - Use the data gathered to problem solve and come up with the most appropriate strategies.
7. **Learn the signs and symptoms of hypoglycemia**
   - Find out what to do when you experience hypoglycemia and learn how to manage it
8. **Understand connection between heart disease and diabetes**
   - Find out ways to reduce your risk for cardiovascular complications

VI. Reducing Risks

3. **Take care of your feet**
   - Check for redness, cuts, bruises or sores that won't heal
   - Use a mirror if needed
   - Don't go barefoot
   - Keep your feet clean and dry
   - Call PCP if with feet problem

VI. Reducing Risks

9. **Talk about your feelings**
   - It is easy to feel overwhelmed, anxious or depressed
   - Talk to your PCP or counselor about your feelings

VI. Reducing Risks

4. **Get recommended vaccines**
   - Flue
   - Pneumonia
   - Hepatitis B
5. **Don't smoke**
   - Smoking damages blood vessels
   - Smoking increases risk of stroke and heart attack

VI. Reducing Risks

- Get recommended health checks and stick to the treatment plan
- Take an active role in keeping heart, kidneys, and eyes healthy
- Act early to stay healthy in the long run!

CHECKLIST
- GLUCOSE
- CHOLESTEROL
- EYES
- KIDNEYS
- BLOOD PRESSURE
- ORAL HEALTH
- FEET
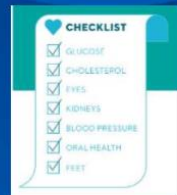
VI. Reducing Risks

REDUCE YOUR RISK OF COMPLICATIONS

- Schedule regular medical checkups.
- Get screened for sleep apnea.
- Get screened for hearing loss.
- Follow your healthy eating plan.
- Commit to moving more and sitting less.
- Take medications as prescribed.
- Monitor your glucose using CGM or blood glucose meters.
- Don't smoke or vape.
- Brush and floss your teeth daily.
- Get a flu shot.
- Get pneumonia and hepatitis B vaccinations.
- Discuss any sadness or distress with your provider.
- Check your feet daily for redness, sores, open wounds.

VII. Monitoring

- Being able to check how your medications are working and what impact any new medications have.
- Being able to see overall trends that you can act on helps you maintain a positive outlook when individual numbers may be out-of-range.
- Lowering your risk of high or low blood glucose by having actionable information.

VI. Reducing Risks

TYPE OF HEALTH CHECK	FREQUENCY
A1C (a blood test that measures your average blood glucose level during the past 3 months)	Every 3 to 6 months
Blood pressure	Every visit

Lipids (blood fats)
  HDL (good cholesterol)
  LDL (bad cholesterol)
Triglycerides (blood fats that come from food and are made by the body)
	At least every year

Eye checkup	Every year
Kidney function tests	Every year
Dental checkup	At least every year
Foot checkup (for nerve function and blood flow)	At least every year

VII. Monitoring

- Problem-solving: learning how different foods affect your blood glucose
- Sticking with a healthy eating pattern by knowing when to have snacks and how they affect your blood glucose levels.

VII. Monitoring

- Problem-solving: learning how different foods affect your blood glucose
- Sticking with a healthy eating pattern by knowing when to have snacks and how they affect your blood glucose levels.

VII. Monitoring

1. Blood Glucose
2. Blood pressure
3. Weight and Activity
4. Sleep

A diabetes care and education specialist can help you:

1 — 2 — 3

VII. Monitoring (Blood Glucose)

➢ The best time to check the effect of your meal on your glucose level is 2 hours after eating.
➢ Contact your diabetes care team if you are having glucose readings below 70mg/dl. You may need your medication dose adjusted or need help with problem solving to find the reason.
➢ Check your glucose levels more often if you think you're getting sick and during any illness.

VII. Monitoring (Blood Glucose)

➢ Bring your glucose record or download report to every appointment with your care team.
➢ When traveling, keep your supplies in the package with the original prescription in your carry-on luggage. If needed, advise security personnel that you are carrying diabetes supplies.

Thank you. Questions?

Appendix K

DAVIS STREET

Davis Street Primary Care Clinic
Week 3 Pre-Test/Post-Test

Name: _____ Date: _____

Read the question carefully and encircle the letter of the correct answer.

1. To achieve any health benefits, you need to participate in higher-intensity activities at least once or twice a week in addition to walking.
   a. True
   b. False

2. People with diabetes who walk every day for 30 to 60 minutes can obtain which benefits?
   a. Improved glucose control.
   b. Improved cardiovascular fitness.
   c. Improved weight control.
   d. All of the above.

3. Which food will raise your blood glucose the most quickly?
   a. A bagel
   b. Diet soda
   c. Fruit juice

4. Which foods will NOT, or only slightly, raise your blood sugar?
   a. Mozzarella cheese and tomato salad
   b. Burrito
   c. Potato and leek soup

5. When using pills that cause "below target" or hypoglycemia (low blood sugars) in combination with pills that don't cause low blood sugar, there is no risk of getting a "low".
   a. True
   b. False

6. If you are treated with pills that cause insulin to be released from the pancreas, or treated with insulin therapy and have hypoglycemia (blood sugars below your target range), you should:
   a. Ignore the problem
   b. Contact your provider to discuss what is happening, including your activity, carbohydrate consumption, alcohol consumption (if any), medication or insulin dose, fingerstick blood sugar levels, and other medical issues at the time
   c. Get more exercise
   d. Increase your medication dose
   e. Restrict carbohydrates in your food

7. Stress hormones are:
   a. The liver
   b. Amylin, glucagon-like polypeptide -1(GLP-1)

    c.   Adrenaline (Epinephrine), glucagon, cortisol, growth hormone
    d.   Ketones, high sugar
    e.   All of the above

8. Since being diagnosed with diabetes, I don't enjoy the things I used to. I'm often sad. I should:
    a.   Just ignore it, and wait for these feelings to go away
    b.   Keep this to myself, because it's my diabetes and I have to deal with it
    c.   Talk to my doctor and seek help

9. Mild symptoms of low blood glucose (hypoglycemia) are best treated with:
    a.   Dextrose or glucose tablets
    b.   Chicken or fish
    c.   Cheese

10. Alternative site testing is NOT recommended when:
    a.   You feel like your blood glucose might be low
    b.   You have eaten or exercised within the last 2 hours
    c.   You have hypoglycemia unawareness and don't feel the symptoms of low blood glucose
    d.   All of the above

11. The best way to avoid complications of diabetes is to:
    a.   Ignore your diabetes, unless you develop symptoms
    b.   Intensively control the blood glucose
    c.   Avoid fruit juice

12. The long-term risk of developing complications from diabetes can be decreased through blood glucose and blood pressure control.
    a.   True
    b.   False

13. While planning a trip, the following should be considered:
    a.   Do I have enough medicines and blood glucose test strips for the entire trip and unforeseen delays?
    b.   Do I know how to count carbohydrates for the foods I will be eating?
    c.   Where is the nearest medical facility?
    d.   All of the above

14. Monitoring your blood glucose will:
    a.   Ensure that your blood glucose levels stay normal
    b.   Give you the feedback you need to keep your blood glucose in target range
    c.   Not be necessary, as long as you eat right

Appendix L

DAVIS STREET

Davis Street Primary Care Clinic
Week 4 Pre-Test/Post-Test

Name: _____   Date: _____

Read the question carefully and encircle the letter of the correct answer.

1. Walking is associated with which of the following in people with diabetes?
   a. Decreased A1C levels.
   b. Reduced body-mass index.
   c. Lowered diastolic blood pressure.
   d. All of the above.

2. Which of the following statements is correct?
   a. Moderate exercise such as brisk walking by itself can reduce the risk of type 2 diabetes.
   b. Moderate exercise such as brisk walking cannot reduce the risk of type 2 diabetes.
   c. Moderate exercise such as brisk walking can increase the risk of type 2 diabetes.
   d. Only high-intensity exercise can reduce the risk of type 2 diabetes

3. How much carbohydrate do you need each day?
   a. 10% of your daily calories
   b. 45-65% of your daily calories
   c. 90% of your daily calories

4. To best meet your blood sugar goals after meals, what strategy works best?
   a. Drink regular sodas instead of diet sodas
   b. Eat fewer non-starchy vegetables
   c. Divide carbohydrates between 3 meals a day, choose more complex (rather than simple) carbohydrates, stay within your daily carbohydrate allowance, and do not skip meals

5. If you have type 2 diabetes and are treated with medicine, you will be on that same medicine for the rest of your life:
   a. True
   b. False

6. If you have type 2 diabetes and are treated with insulin:
   a. The insulin is ALWAYS given once a day
   b. The insulin is ALWAYS given as multiple daily injections
   c. You do NOT have to match the insulin dose to the amount of sugar and starch in your diet
   d. You should NOT be treated with an insulin pump
   e. There are many different ways the insulin may be prescribed - the insulin dose regimen should match your specific needs

7. Getting diabetes is my fault. If I had taken better care of myself, I wouldn't have diabetes.
   a. True
   b. False

8. Depression is a sign of personal weakness.
   a. True
   b. False

9. My insurance only covers one glucose test strip a day. How can I monitor my blood sugar throughout the day, when I only have one strip?
   a. Only check when you feel a low blood sugar
   b. Only check when you feel a high blood sugar
   c. Check in the morning before breakfast
   d. Check after a meal once a day
   e. Rotate the time of the glucose checks throughout the day and log the results and the time of the check.

10. Alternative site testing is NOT recommended when:
    a. You feel like your blood glucose might be low
    b. You have eaten or exercised within the last 2 hours
    c. You have hypoglycemia unawareness and don't feel the symptoms of low blood glucose
    d. All of the above

11. The best way to know if your eyes are healthy, and have not been damaged by diabetes is:
    a. If your vision is clear, your eyes are ok
    b. If your vision is blurry, you have diabetic damage
    c. To go to an ophthalmologist for an eye exam every year, or more often, if recommended by your physician

12. Taking care of your feet includes:
    a. Visually inspecting them for any injury every day
    b. Washing and drying your feet well each day, paying special attention to the area between the toes
    c. Protecting your feet from extremes in temperature
    d. Not smoking
    e. All of the above

13. Monitor your blood glucose more frequently when:
    a. You are sick
    b. You are traveling
    c. Your routine changes
    d. Your diabetes medication changes
    e. All of the above

14. Using a continuous glucose monitor means:
    a. You won't have to do fingerstick testing with a meter anymore
    b. Readings can be used for making immediate treatment decisions
    c. You will have trend information that can help you manage your blood glucose more effectively

Appendix M

DAVIS STREET

Davis Street Primary Care Clinic
Week 5 Pre-Test/Post-Test

Name: _____   Date: _____

Read the question carefully and encircle the letter of the correct answer.

1. When it comes to walking for diabetes prevention and control, the number of steps you take matters.
   a. True
   b. False

2. Generally speaking, aerobic activity will lower blood sugars, and the more vigorous the activity, the more likely it is that this will occur. However, many activities of daily life will also increase insulin sensitivity. Activities that may cause low blood sugar reactions include:
   a. Shopping
   b. Gardening
   c. House cleaning
   d. Swimming
   e. All of the above

3. The benefits of counting carbohydrates are:
   a. Counting carbohydrates keeps you in control of your blood sugar
   b. Counting carbohydrates keeps you in balance with your diabetes medications
   c. Counting carbohydrates keeps you in control of food portions and helps to manage your body weight
   d. All of the above

4. To count carbohydrates using a food label, what items do you need to look at on the food label?
   a. Serving size and grams of total carbohydrate, fiber, and sugar alcohol per serving
   b. Serving size and calories per serving
   c. Grams of sugar per serving and serving size

5. If you have type 2 diabetes and are treated with insulin:
   a. The insulin is ALWAYS given once a day
   b. The insulin is ALWAYS given as multiple daily injections
   c. You do NOT have to match the insulin dose to the amount of sugar and starch in your diet
   d. You should NOT be treated with an insulin pump
   e. There are many different ways the insulin may be prescribed - the insulin dose regimen should match your specific needs

6. Insulin can be given either as an intensive insulin regimen or as sliding scale therapy.
   a. True
   b. False

7. Diabetes education is the same everywhere. I took a class a few years ago. I don't need it again.
   a. True
   b. False

8. Taking care of my children, my family, my job, and my diabetes can be overwhelming, and getting the support I need can lessen that burden.
   a. True
   b. False

9. If you take insulin or types of diabetes pills that stimulate your pancreas to release insulin, drinking alcohol places you at a higher risk of having low blood sugars.
   a. True
   b. False

10. If you are taking insulin and/or pills that cause insulin to be released from the pancreas, there are several questions you should consider each time before starting exercise. These include:
    a. What is my blood sugar right now?
    b. Do I have a meter so that I can check my blood sugar during exercise?
    c. Do I have snacks nearby in case I need them?
    d. All of the above

11. Using a continuous glucose monitor means:
    a. You won't have to do fingerstick testing with a meter anymore
    b. Readings can be used for making immediate treatment decisions
    c. You will have trend information that can help you manage your blood glucose more effectively

12. My insurance only covers one glucose test strip a day. How can I monitor my blood sugar throughout the day, when I only have one strip?
    a. Only check when you feel a low blood sugar
    b. Only check when you feel a high blood sugar
    c. Check in the morning before breakfast
    d. Check after a meal once a day
    e. Rotate the time of the glucose checks throughout the day and log the results and the time of the check.

13. Taking care of your feet includes:
    a. Visually inspecting them for any injury every day
    b. Washing and drying your feet well each day, paying special attention to the area between the toes
    c. Protecting your feet from extremes in temperature
    d. Not smoking
    e. All of the above

14. If you choose to drink alcohol, drinking in moderation means:
    a. Limit alcohol intake to no more than one serving per day for women, and no more than two servings per day for men.
    b. Limit alcohol intake to no more than two servings per day for women and no more than three servings per day for men.
    c. Limit alcohol to one serving per week for women, and no more than two servings per week for men.

Appendix N

DAVIS STREET

Davis Street Primary Care Clinic
Diabetes Self–Management Post–Survey #1

Name: _____   **Date:** _____

The following survey is intended to assess the individual's self-care activities related to Diabetes Self-Management (DSM) after four (4) weeks. Read each statement in the survey and mark the response that most closely applies to you.

1. I check my blood sugar levels regularly with care and attention. ☐ Blood sugar measurement is not required as a part of my treatment.	Never 1	2	Sometimes 3	4	Always 5	
2. I record my blood sugar levels regularly	Never 1	2	Sometimes 3	4	Always 5	
3. I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	Never 1	2	Sometimes 3	4	Always 5	
4. I do regular physical activity to achieve optimal blood sugar levels.	Never 1	2	Sometimes 3	4	Always 5	
5. I keep all doctors' appointments recommended for diabetes management (PCP, Endocrinologist, Ophthalmologist, Podiatrist).	Never 1	2	Sometimes 3	4	Always 5	

6. Knowledge on 7 Self-Care Behaviors of DSM:
   1. Healthy Eating
   2. Being Active
   3. Taking Medication
   4. Healthy Coping
   5. Problem Solving
   6. Reducing Risks or Complications
   7. Monitoring Blood Sugar
	No
	1
	1
	1
	1
	1
	1
	1
		2
		2
		2
		2
		2
		2
		2
			Average
			3
			3
			3
			3
			3
			3
			3
				4
				4
				4
				4
				4
				4
				4
					High
					5
					5
					5
					5
					5
					5
					5	

Today's Weight: _____
Today's Hemoglobin A1c: _____
Recent Referral/Date: PCP _____ Endoc _____ Ophthalmologist _____ Podiatrist _____

Appendix O

Davis Street Primary Care Clinic
Week 6 Pre-Test/Post-Test

Name: _____   **Date:** _____

Read the question carefully and encircle the letter of the correct answer.

1. Generally speaking, aerobic activity will lower blood sugars, and the more vigorous the activity, the more likely it is that this will occur. However, many activities of daily life will also increase insulin sensitivity. Activities that may cause low blood sugar reactions include:
   a. Shopping
   b. Gardening
   c. House cleaning
   d. Swimming
   e. All of the above

2. Even if you are unable to do vigorous aerobic exercise, it is important to increase your general activity level. Examples of how to do this include:
   a. Take the stairs at work
   b. Park your car on the far side of the parking lot
   c. Spend part of your lunch hour walking
   d. Do errands on foot
   e. All of the above

3. The carbohydrate exchange serving for rice is:
   a. 1/3 cup
   b. 1/2 cup
   c. 1 cup

4. At breakfast, you make the following meal:
1 slice of toast which is 1 carbohydrate exchange
1 small orange which is 1 carbohydrate exchange
1 cup nonfat milk which is 1 carbohydrate exchange
How many grams of carbohydrates are in your meal?
   a. 30 grams of carbohydrate, or 2 exchanges
   b. 45 grams of carbohydrate, or 3 exchanges
   c. 60 grams of carbohydrate, or 4 exchanges

5. As a person with diabetes, can sugar and sugar-containing foods be included in your meal plan?
   a. No. Sugar and sugar-containing foods make your blood sugar higher than equal amounts of other types of carbohydrates.
   b. Yes. Sugar and sugar-containing foods can be included in your meal plan.

6. Intensive insulin therapy uses the concepts of basal and bolus insulin coverage. Basal Insulin refers to:
   a. Insulin for food
   b. Insulin to cover overnight and between-meal insulin requirements.

7. Intensive insulin therapy uses the concepts of basal and bolus insulin coverage. Bolus Insulin refers to:
   a. Insulin for food
   b. Insulin for a high sugar
   c. Insulin for sleeping
   d. Both A and B only
   e. All of the above

8. Since being diagnosed with diabetes, I don't enjoy the things I used to. I'm often sad. I should:
   a. Just ignore it, and wait for these feelings to go away
   b. Keep this to myself, because it's my diabetes and I have to deal with it
   c. Talk to my doctor and seek help

9. Getting diabetes is my fault. If I had taken better care of myself, I wouldn't have diabetes.
   a. True
   b. False

10. The best way to avoid complications of diabetes is to:
    a. Ignore your diabetes, unless you develop symptoms
    b. Intensively control the blood glucose
    c. Avoid fruit juice

11. The long-term risk of developing complications from diabetes can be decreased through blood glucose and blood pressure control.
    a. True
    b. False

12. While planning a trip, the following should be considered:
    a. Do I have enough medicines and blood glucose test strips for the entire trip and unforeseen delays?
    b. Do I know how to count carbohydrates for the foods I will be eating?
    c. Where is the nearest medical facility?
    d. All of the above

13. Monitoring your blood glucose will:
    a. Ensure that your blood glucose levels stay normal
    b. Give you the feedback you need to keep your blood glucose in the target range
    c. Not be necessary, as long as you eat right

14. If you have type 2 diabetes and are treated with medicine, you will be on that same medicine for the rest of your life:
    a. True
    b. False

Appendix P

DAVIS STREET

Davis Street Primary Care Clinic
Week 7 Pre-Test/Post-Test

Name: _____   Date: _____

Read the question carefully and encircle the letter of the correct answer.

1. What is the recommended amount of exercise if you have diabetes?
   a. At least 200 minutes of activity per week.
   b. At least 30 minutes of activity five days a week.
   c. At least 10 to 20 minutes of activity twice a week.
   d. At least 90 minutes of activity per week.

2. In general, the blood sugar is lowered with:
   a. Exercise / Increased activity
   b. Weight loss
   c. A carbohydrate-controlled diet
   d. Medications including insulin
   e. All of the above

3. A sliding scale regimen:
   a. Is based on pre-defined blood glucose ranges
   b. Is a more approximate guess of daily insulin requirements
   c. Requires a predictable and consistent lifestyle for success
   d. All of the above

4. If you have type 2 diabetes and are treated with insulin, your blood sugar may increase when you:
   a. Gain weight
   b. Are inactive
   c. Are sick
   d. Eat too much sugar and starch-containing food, including fruit, juice, or milk
   e. Rebound from having a low blood sugar
   f. Inject insulin into overused injection sites, scar tissue, or too close to the midline
   g. Are you on the wrong dose of insulin
   h. All of the above

5. Stress hormones are:
   a. The liver
   b. Amylin, glucagon-like polypeptide -1(GLP-1)
   c. Adrenaline (Epinephrine), glucagon, cortisol, growth hormone
   d. Ketones, high sugar
   e. All of the above

6. Since being diagnosed with diabetes, I don't enjoy the things I used to. I'm often sad. I should:
   a. Just ignore it, and wait for these feelings to go away
   b. Keep this to myself, because it's my diabetes and I have to deal with it
   c. Talk to my doctor and seek help

7. Stress hormones are:
   a. The liver
   b. Amylin, glucagon-like polypeptide -1(GLP-1)
   c. Adrenaline (Epinephrine), glucagon, cortisol, growth hormone
   d. Ketones, high sugar
   e. All of the above

8. Since being diagnosed with diabetes, I don't enjoy the things I used to. I'm often sad. I should:
   a. Just ignore it, and wait for these feelings to go away
   b. Keep this to myself, because it's my diabetes and I have to deal with it
   c. Talk to my doctor and seek help

9. Mild symptoms of low blood glucose (hypoglycemia) are best treated with:
   a. Dextrose or glucose tablets
   b. Chicken or fish
   c. Cheese

10. Alternative site testing is NOT recommended when:
    a. You feel like your blood glucose might be low
    b. You have eaten or exercised within the last 2 hours
    c. You have hypoglycemia unawareness and don't feel the symptoms of low blood glucose
    d. All of the above

11. The long-term risk of developing complications from diabetes can be decreased through blood glucose and blood pressure control.
    a. True
    b. False

12. The best way to know if your eyes are healthy, and have not been damaged by diabetes is:
    a. If your vision is clear, your eyes are ok
    b. If your vision is blurry, you have diabetic damage
    c. To go to an ophthalmologist for an eye exam every year, or more often, if recommended by your physician

13. Monitoring your blood glucose will:
    a. Ensure that your blood glucose levels stay normal
    b. Give you the feedback you need to keep your blood glucose in the target range
    c. Not be necessary, as long as you eat right

14. Monitor your blood glucose more frequently when:
    a. You are sick
    b. You are traveling
    c. Your routine changes
    d. Your diabetes medication changes
    e. All of the above

Appendix Q

DAVIS STREET

Davis Street Primary Care Clinic
Week 8 Pre-Test/Post-Test

Name: _____   Date: _____

Read the question carefully and encircle the letter of the correct answer.

1. Diabetes Mellitus is defined as:
   a. Too much insulin, a hormone, in the bloodstream
   b. Too much sugar or glucose in the bloodstream
   c. Weighing too much

2. Type 2 diabetes:
   a. Is the most common form of diabetes worldwide
   b. Is strongly familial and has multiple causes
   c. Has a range of treatments that includes: following a diet and getting more exercise, using one or more kinds of oral medicine, and being treated with insulin
   d. A and B only
   e. B and C only
   f. All of the above

3. Blood sugar level can be lowered with:
   a. Medications including insulin
   b. Carbohydrate controlled diet
   c. Weight loss
   d. All of the above

4. There is a risk of hypoglycemia (low blood sugar) when using insulin therapy or oral medication that causes insulin to be released from the pancreas.
   a. True
   b. False

5. With Type 2 Diabetes, your blood sugar may increase when you are:
   a. Active and losing weight
   b. Eating too much sugar and starchy foods including fruits, juice, or milk
   c. Taking the wrong dose of medication or insulin
   d. B and C only
   e. All of the Above

6. Diabetic Ketoacidosis (DKA) is a life-threatening emergency and requires immediate medical attention that can affect people with both Type 1 and Type 2 Diabetes.
   a. True
   b. False

7. Type 2 Diabetes Mellitus can be managed by:
   a. Lifestyle changes such as a healthy diet and exercise
   b. Weight management
   c. Routine follow-up with your Doctor, Endocrinologist, Podiatrist, Ophthalmologist
   d. A and C only
   e. All of the above

8. If you have Type 2 Diabetes and are treated with medicine,
   a. You will be on that same medication for the rest of your life
   b. Your medication may change over time
   c. A very effective lifestyle change may help you go off medications all together.
   d. A and C only
   e. B and C only
   f. All of the above.

9. If you have Type 2 Diabetes and are treated with insulin, you may have Hypoglycemia (low blood sugar reaction) when you:
   a. Delay eating after taking mealtime insulin
   b. Do not exercise or increase your daily activity level
   c. Are on the wrong dose of insulin
   d. A and B only
   e. A and C only
   f. All of the above

10. If you take insulin or oral diabetes medication that stimulates your pancreas to release insulin, drinking alcohol places you at a HIGHER risk of having low blood sugars.
    a. True
    b. False

1. If you have Type 2 Diabetes and are treated with medicine,
   a. You will be on that same medication for the rest of your life
   b. Your medication may change over time
   c. A very effective lifestyle change may help you go off medications all together.
   d. A and C only
   e. B and C only
   f. All of the above.

2. If you have Type 2 Diabetes and are treated with insulin, you may have Hypoglycemia (low blood sugar reaction) when you:
   a. Delay eating after taking mealtime insulin
   b. Do not exercise or increase your daily activity level
   c. Are on the wrong dose of insulin
   d. A and B only
   e. A and C only
   f. All of the above

13. In general, the blood sugar is lowered with:

    a. Exercise / Increased activity
    b. Weight loss
    c. A carbohydrate-controlled diet

    d.   Medications including insulin
    e.   All of the above

14. A sliding scale regimen:
    a.   Is based on pre-defined blood glucose ranges
    b.   Is a more approximate guess of daily insulin requirements
    c.   Requires a predictable and consistent lifestyle for success
    d.   All of the above

Appendix R

Answer Keys

Week 1 Pre-Test/Post-Test	Week 4 Pre-Test/Post-Test	7. D
1. B	1. D	8. C
2. F	2. A	9. B
3. D	3. B	10. B
4. A	4. C	11. A
5. D	5. B	12. D
6. T	6. E	13. B
7. E	7. B	14. B
8. E	8. B	
9. E	9. E	Week 7 Pre-Test/Post-Test
10. B	10. H	1. B
	11. C	2. E
Week 2 Pre-Test/Post-Test	12. E	3. D
1. C	13. E	4. H
2. A	14. C	5. C
3. A		6. C
4. A	Week 5 Pre-Test/Post-Test	7. C
5. D	1. A	8. C
6. E	2. E	9. A
7. D	3. D	10. D
8. C	4. A	11. A
9. A	5. E	12. C
10. D	6. A	13. B
	7. B	14. E
Week 3 Pre-Test/Post-Test	8. A	
1. A	9. A	Week 8 Pre-Test/Post-Test
2. D	10. D	1. B
3. C	11. C	2. F
4. A	12. E	3. D
5. A	13. E	4. A
6. B	14. A	5. D
7. C		6. A
8. C	Week 6 Pre-Test/Post-Test	7. E
9. A	1. E	8. E
10. D	2. E	9. E
11. B	3. A	10. B
12. A	4. B	11. E
13. D	5. B	12. E
14. B	6. B	13. J

Appendix S

DAVIS STREET

Davis Street Primary Care Clinic

Diabetes Self-Management Post–Survey #2

Name: _____   **Date:** _____

The following survey is intended to assess the individual's self-care activities related to Diabetes Self-Management (DSM) after four (4) weeks. Read each statement in the survey and mark the response that most closely applies to you.

1. I check my blood sugar levels regularly with care and attention. ☐ Blood sugar measurement is not required as a part of my treatment.	Never 1	2	Sometimes 3	4	Always 5
2. I record my blood sugar levels regularly	Never 1	2	Sometimes 3	4	Always 5
3. I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	Never 1	2	Sometimes 3	4	Always 5
4. I do regular physical activity to achieve optimal blood sugar levels.	Never 1	2	Sometimes 3	4	Always 5
5. I keep all doctors' appointments recommended for diabetes management (PCP, Endocrinologist, Ophthalmologist, Podiatrist).	Never 1	2	Sometimes 3	4	Always 5

6. Knowledge on 7 Self-Care Behaviors of DSM:
  1. Healthy Eating
  2. Being Active
  3. Taking Medication
  4. Healthy Coping
  5. Problem Solving
  6. Reducing Risks or Complications
  7. Monitoring Blood Sugar
	No
	1
	1
	1
	1
	1
	1
	1
		
		2
		2
		2
		2
		2
		2
		2
			Average
			3
			3
			3
			3
			3
			3
			3
				
				4
				4
				4
				4
				4
				4
				4
					High
					5
					5
					5
					5
					5
					5
					5

Today's Weight: _____

Today's Hemoglobin A1c: _____

Recent Referral/Date: PCP _____ Endoc _____ Ophthalmologist _____ Podiatrist _____

Appendix T

Davis Street Primary Care Clinic
Diabetes Self-Management Follow-up

Name: _____ Sex: _____ DOB: _____ Today's Date: _____
Primary Care Provider: _____

I.   Patient to Complete:
1. What are your blood sugars?   Before breakfast _____ 2 hours after dinner _____
    Random _____

2. What exercises do you do?
    a. Type: Aerobic _____ Strength Training ___ Stretching ___ Balance (Yoga/Tai-chi) ___
        Other: ___
    b. How long (in minutes per week) _____

3. How often do you eat the following   Never   Sometimes   Always
    a. 5 servings of fruits/veggies daily   1   2   3   4   5
    b. Low fat foods   1   2   3   4   5
    c. Moderate sized portions   1   2   3   4   5
    d. 3 meals with healthy snacks in between   1   2   3   4   5

4. How satisfied are you with the progress   Unsatisfied   Somewhat   Satisfied
    you are making in treating your diabetes?   1   2   3   4   5

5. Have you quit smoking?   Y___ N ___ N/A___ If not, how many packs per day? ___

6. Do you drink alcohol? Y___ N ___ If so, how many times you drink in a week? ___
    How much? ___mL or oz

7. Do you check your feet every day? Y___ N ___ Or every week? Y___ N ___

II.   Provider to Complete
Allergies: _____
Current Medications:	HbA1C: (<8%)/ _____	**Today's Data**
1.	Microalbumin: (<35)/	Wt: _____
2.	_____	Ht: _____
3.	BUN/Cr: _____	BMI: _____
4.	Foot Exam (risk): _____	BP: _____
5.	Eye Exam: _____	HR: _____

(Goal)/Latest Result		**Foot Exam Score: (Circle)**			
BP = (<130/80)/_____		L: 0	1	2	3
BMI: (<27)/ _____		R: 0	1	2	3

Immunizations UTD?   Flu: Y ___ N ___   Pneumo: Y ___ N ___   Covid Vaccine: Y ___ N ___

III.   Diabetes Mellitus, Type 2   Hypertension Y ___ N ___   Hyperlipidemia Y ___ N ___

IV.   Chart Review/ Recommendations: (Labs, Meds, Referrals, Other)

Labs:
Meds:
Referrals:
Other:

Appendix U

Work Breakdown Structure (WBS)

```
┌──────────────────────────────────────────────────────────────────────────┐
│                                                                            │
│              ┌──────────────────────────────────────────┐                  │
│              │              DSPCC Provider               │                  │
│              └──────────────────────────────────────────┘                  │
│                                    │                                       │
│              ┌──────────────────────────────────────────┐                  │
│              │ Identification of Patients with T2DM       │                  │
│              │ based on ADA Guidelines                    │                  │
│              └──────────────────────────────────────────┘                  │
│                                    │                                       │
│              ┌──────────────────────────────────────────┐                  │
│              │ DSM (Diabetes Self-Management) Pre-Survey  │                  │
│              └──────────────────────────────────────────┘                  │
│                                    │                                       │
│         ┌────────────────────────┐   ┌────────────────────────┐            │
│         │ Positive DSM Pre-Survey│   │ Negative DSM Pre-Survey │            │
│         │ DM Pre-Survey Score ≥ 4│   │ DM Pre-Survey Score < 4 │            │
│         └────────────────────────┘   └────────────────────────┘            │
│                                              │                             │
│                                 ┌──────────────────────────┐               │
│                                 │  DSM Assessment: HbA1c   │               │
│                                 └──────────────────────────┘               │
│                                                                            │
│        ┌────────────┐  ┌────────────┐  ┌──────────────┐                    │
│        │ Controlled │  │Uncontrolled│  │Critically High│                   │
│        │HbA1c 6 to  │  │HbA1c 7 to  │  │HbA1c > 9 mg/dL│                   │
│        │6.9 mg/dL   │  │8.9 mg/dL   │  │              │                    │
│        └────────────┘  └────────────┘  └──────────────┘                    │
│                                                                            │
│  ┌──────────────┐                                                          │
│  │ Continue with │                                                          │
│  │ Management    │                                                          │
│  └──────────────┘                                                          │
└──────────────────────────────────────────────────────────────────────────┘
```

DSPCC Provider

Identification of Patients with T2DM based on ADA Guidelines

DSM (Diabetes Self-Management) Pre-Survey

Positive DSM Pre-Survey
DM Pre-Survey Score ≥ 4

Negative DSM Pre-Survey
DM Pre-Survey Score < 4

DSM Assessment: HbA1c

Controlled
HbA1c 6 to 6.9 mg/dL

Uncontrolled
HbA1c 7 to 8.9 mg/dL

Critically High
HbA1c > 9 mg/dL

Continue with Management

DSM Intervention

| Educational Presentations (2 Sessions) [Week 1-2] | Weekly Phone Follow-up [Week 1-8] | Weekly Diabetes Support Group Meeting [Week 3-8] |

DSM Post-Survey 1 [Week 4]
DSM Post-Survey 2, Weight, HbA1c [Week 8]

Appendix V

SWOT Analysis

Strengths	Weakness
- Increase DSM knowledge and practice - Addresses issues (medication adherence, poor glycemic control and lifestyle improvement) - Cost-effective - Improve outcomes and self-management - Education provided through lectures and individual counseling	- A pilot study - limited project population of 10 to 15 participants.
Opportunities.	**Threats.**
- Enhance knowledge and practice in DSM - Determine danger signs (Hypo or Hyperglycemia) - Improve HbA1c, and weight through = - Reduce risks of diabetes complications - Minimize medical costs from diabetes complications - Improve adherence to medications - Improve Self-efficacy - Improve the quality of life	- non-completion of surveys due to attitude or lack of time - COVID-19 restrictions/protocol - Social distancing and limited face-to-face interaction - Participants with flu-like or COVID-like symptoms not allowed to participate with in-person meeting.

Appendix W

GANTT Chart

Event	Week 0	1	2	3	4	5	6	7	8	9	10	11	12	13
Obtain Project Authorization	■													
Identification of Patients with T2DM	■													
DSM Pre-Survey		■												
DSM Assessment (Questionnaire, Weight, HbA1c)		■												
DSM Educational Presentations (2) In-Person		■	■											
Weekly Phone Follow-up		■	■	■	■	■	■	■	■					
Weekly In-Person Diabetes Support Group Meeting				■	■	■	■	■	■					
DSM Post-Survey 1 (Questionnaire)					■									
DSM Post-Survey 2 (Questionnaire, Weight, HbA1c)									■					
Data Collection		■	■	■	■	■	■	■	■	■				
Evaluate Findings										■	■	■		
Present Findings													■	
Finalize Project Write-up														■

Units	Course/Life Event	Year / Term	Unit Block
3	N 705A	2018 Spring (Jan–May)	6 Units
3	N 7002	2018 Spring (Jan–May)	
2	N 7004	2018 Summer (Jun–Aug)	7 Units
2	N 7003	2018 Summer (Jun–Aug)	
3	N 705B	2018 Summer (Jun–Aug)	
3	N 706	2018 Fall (Sep–Dec)	10 Units
3	N 7006	2018 Fall (Sep–Dec)	
1	N 7001	2018 Fall (Sep–Dec)	
3	N 707	2018 Fall (Sep–Dec)	
3	N 7007	2019 Spring	3 Units
2	N 7100	2019 Summer	8 Units
3	N 7009	2019 Summer	
2	N 7008	2019 Summer	
1	N 790	2019 Summer	
4	N 7210	2019 Fall	7 Units
2	N 7220	2019 Fall	
1	N 791	2019 Fall	
3	N 7230	2020 Spring	11 Units
3	N 7240	2020 Spring	
3	N 7005	2020 Spring	
2	N 792	2020 Spring	
3	N 7250	2020 Summer	7 Units
3	N 7260	2020 Summer	
1	N 763	2020 Summer	
3	N 7270	2020 Fall	8 Units
3	N 7280	2020 Fall	
2	N 793	2020 Fall	
1	N 749A	2021 Spring	1 Unit
3	N 7290	2021 Summer	3 Units
1	N 749B	2021 Fall	5 Units
1	N 789	2021 Fall	
3	N 795	2021 Fall	
	Literature Search for DNP	2021 Spring	
	Establish DNP Project and Review with Chair	2021 Summer	
	Develop Goals and Objectives	2021 Fall	
	Implement Project	2022 Spring	
	Collect Data	2022 Spring	
	Evaluate and Present Findings	2022 Spring	
	Graduation	2022 May	

Appendix X

Responsibility/Communication Plan

Contact Person	Frequency	Communication Method
DNP Chair Dr. Jodie Sandhu	As needed	Phone, email, text, zoom meetings
DNP Committee Member Dr. Joan Fraino	As needed	In-person, phone, text, email
DSPCC Staff	Initial and as needed	In-person, phone, email
DSPCC patients with DM2	Weekly and as needed	In-person, phone, Facebook group

Appendix Y

Project Budget and Cost

Items	Details	Cost (in USD)
Breakfast	$ 5.00/meal x 13 persons x 5 sessions	$325.00
	$ 5.00/meal x 10 persons x 3 sessions	$150.00
Resources and Educational Materials	Handouts, Folders, Pens, Printing x 8 weeks	$50.00
Travel Expenses (Gas)	10 days	$75.00
Contingency Fund	For 8 weeks	$50
Total (in USD)		**$650.00**

DNP Project Time Expenditures	Cost (in Hrs)
Community Assessment	40
Project Research	30
Project Planning	40
Recruiting Participants	24
Creating Learning Materials, pre/post-test, and Handouts	16
Project Implementation	96
Data Analysis	24
Writing DNP Project	40
Project Research	30
Total (in Hrs)	**310**

Appendix Z

Proposed Annual Budget and Cost

Items	Details	Annual Cost
Breakfast	$ 5.00/meal x 10 persons x 52 sessions	$2,600.00
Resources and Educational Materials	Handouts, Folders, Pens, Printing x 52 weeks	$325.00
Travel Expenses (Gas)	52 days (Roundtrip)	$520.00
Contingency Fund	52 weeks	$325.00
Project Manager Salary	$45/hr x 6 to 8 hrs per week x 52 weeks	$14,040.00 to $18,720.00
Total	Total without Project Manager	$3,770.00
	Total with Project Manager	$17,810.00 to $22,490.00

Appendix AA

Topics for Education/Teaching

Appendix 1. The detailed contents of the American Association of Diabetes Educators 7 Self-Care Behaviors (AADE7) education and the telehealthcare service.

AADE7 Educations	Content of Educations	Telehealthcare Service
Being Active	Habit of exercising Type of exercise Frequency of exercising Reason of not exercising Evaluations of CDEs[a]	Monitor daily glucose and daily excise records Encourage to do sufficient exercise
Healthy Eating	Intake of fiber Intake of fat and cholesterol Intake of high oil Intake of sodium and dessert Evaluations of CDEs[a]	Monitor daily glucose and daily food intake records Provide adequate dietary knowledge and adjustment support
Taking Medication	Cooperation and obedience of medication order Knowledge of insulin injection Evaluations of CDEs[a]	Monitor daily glucose and daily insulin injection records Enhance the skill of insulin injection and medication obedience
Healthy Coping	Reasons of pressure Ways to relieve pressure Evaluations of CDEs[a]	Provide humanity support
Problem Solving	Frequency of Hypoglycemia **Ways to treat Hypoglycemia** Frequency of Hyperglycemia Ways to treat Hyperglycemia Evaluations of CDEs[a]	Support in coping with Hypoglycemia and Hyperglycemia
Reducing Risks	Habits of Smoking Foot care Complication evaluation Evaluations of CDEs[a]	Daily status monitoring Support in foot care Suggestion to quit smoking
Monitoring	Knowledge of SMBG[b] Method of performing SMBG[b] Frequency of SMBG[b] Recording of SMBG[b] Reason of not performing SMBG[b] Evaluations of CDEs[a]	Enhance the skill of SMBG[b] Remind of performing SMBG[b] Monitor daily glucose

[a]CDE: Certified diabetes educator
[b]SMBG: Self monitoring of blood glucose

Appendix AB

Keyword Search Results

Database	Key Word Searches	Limits	# of Citations Found / Kept	Rationale for Inclusion / Exclusion
Thoreau	Diabetes self-management	5-year period	6638 / 4	Many studies did not have an educational component to them. 4 were kept because the intervention featured a patient education component.
CINAHL Plus with Full Text	Diabetes self-management	10-year period	7436 / 6	Education mostly involved nurse training and nurses as participants. Only six studies were kept, 3 of these were also found in a search using the keyword interventions.
ERIC and Education Source Combined Search,	Diabetes self-management	2016-2021	3,090 /0	The majority of the studies did not have an educational component to them and most focused on pharmacological intervention
Medline with Full text	Diabetes self-management	2016-2021	1,577/ 1	Education mostly involved nurse training and nurses as participants
Cochrane Central Register of Controlled Trials	Diabetes self-management	1990-2021	958/1	Only the study that involved an educational component was chosen to be part of the literature review
Thorea	diabetes self management education or dsme or diabetes education			
CINAHL Plus with Full Text	diabetes self management education or dsme or diabetes education			
ERIC and Education Source Combined Search,	diabetes self management education or dsme or diabetes education			
Medline with Full text	education or dsme or diabetes education			

Appendix AC

Johns Hopkins Nursing EBP: Level of Evidence Appraisal Tool

Article	Level of Evidence (I to VII)	Data/Evidence Findings	Conclusion	Use of Evidence in EBP Project Plan
Andrich, D., & Foronda, C. (2020). Improving Glycemic Control and Quality of Life With Diabetes Self-Management Education: A Pilot Project. Journal of continuing education in nursing, 51(3), 119–123. https://doi.org/10.3928/00220124-20200216-06	Level II- quasi experimental pretest-posttest design (Diabetes self-management education, support, and goal setting sessions were conducted during a 3-day period at the clinic, and participants engaged in one session only. Each session included: information sharing about disease management, psychosocial support as it relates to disease management, behavioral support in managing T2DM including glucose monitoring, diet, and lifestyle modification, multidisciplinary integration of care, and care coordination including referrals to an optometrist, registered dietician, or podiatrist as needed.)	Use of DSME/S increased by 15% (p < .005). Participants demonstrated a statistically significant decrease in mean FBG and a statistically significant increase in QOL. Compliance with using DSME/S increased to 35% after the DSME/S practice change initiative.	Increasing utilization of DSME/S improved patients' glycemic control and QOL DSME/S plays a vital role in achieving desired glycemic control and QOL for patients with T2DM; however, evidence shows DSME/S is not used effectively in practice.	This article will help

Azami, G., Soh, K. L., Sazlina, S. G., Salmiah, M. S., Aazami, S., Mozafari, M., & Taghinejad, H. (2018). Effect of a Nurse-Led Diabetes Self-Management Education Program on Glycosylated Hemoglobin among Adults with Type 2 Diabetes. *Journal of diabetes research, 2018*, 4930157. https://doi.org/10.1155/2018/4930157	Level-Irandomized controlled trial One hundred forty-two adults with type 2 diabetes were randomized to receive either usual diabetes care (control group) or usual care plus a nurse-led diabetes self-management education (intervention group). The duration of the intervention was 12 weeks. The primary outcome was glycosylated hemoglobin (HbA1c values). Secondary outcomes were changes in blood pressure, body weight, lipid profiles, self-efficacy (efficacy expectation and outcome expectation), self-management behaviors, quality of life, social support, and depression. Outcome measures were assessed at baseline and at 12-week and 24-week post-randomization.		Patients in the intervention group showed significant improvement in HbA1c, blood pressure, body weight, efficacy expectation, outcome expectation, and diabetes self-management behaviors.	
Chai, S., Yao, B., Xu, L., Wang, D., Sun, J., Yuan, N., Zhang, X., & Ji, L. (2018). The effect of diabetes self-management education on psychological status and blood glucose in newly diagnosed patients with diabetes type 2. *Patient Education and Counseling, 101*(8), 1427–1432. https://doi.org/10.1016/j.pec.2018.03.020		A total of 118 patients were randomly assigned to two groups (education group, n = 63; control group, n = 55). Compared with the control group, the anxiety score (36.00 vs. 42.50, $P < 0.05$) and depression score (35.50 vs. 44.00, $P < 0.05$) significantly decreased at the	The psychological status and blood glucose of patients with diabetes receiving self-management education were significantly improved. Practice Implications: Type 2 diabetes mellitus has been usually linked to increased prevalence and risk of depression and anxiety, which can affect blood glucose levels. Through education, the mood of	

		sixth month in the education group, respectively. Compared with the control group, fasting blood glucose (6.78 mmol/L vs. 7.70 mmol/L, $P < 0.00$), postprandial blood glucose (7.90 mmol/L vs. 10.58 mmol/L, $P < 0.00$), and glycosylated hemoglobin A1C level [6.20 (5.80, 6.60)% vs. 6.70 (6.40, 7.30)%, $P < 0.01$] significantly decreased after the sixth month in the education group.	newly diagnosed patients with diabetes improved, resulting in better blood glucose control.	
Fan, M. H., Huang, B. T., Tang, Y. C., Han, X. H., Dong, W. W., & Wang, L. X. (2016). Effect of individualized diabetes education for type 2 diabetes mellitus: a single-center randomized clinical trial. African health sciences, 16(4), 1157–1162. https://doi.org/10.4314/ahs.v16i4.34	Level I- randomized clinical trial	At the end of the study, the body mass index (21.5±2.5 vs 23.6±1.6 kg/m2, P =0.002), waist circumference (83.7±6.4 vs 85.7±7.7 cm, P =0.03), fasting blood glucose (6.0±0.8 vs 6.9±2.1 mmol/L, P =0.004), HbA1c (6.2±0.6% vs 6.9±3.1%, P =0.03), systolic blood pressure (130.1±8.8 vs 135.1±8.4 mmHg, P =0.003),triglyceride (1.21±0.66 vs 1.46±0.58 mmol/L) and low-density lipoprotein (2.36±0.44 vs 2.84±0.64 mmol/L, P =0.03) in the study group was	Individualized diabetes education is more effective than group education in facilitating the control of type 2 diabetes.	The evidence-based practice here involved training the practicing nurses on diabetes education. Patients in the intervention group were educated individually and based on their personalities. Gains were seen in terms of the BMIs, waist circumferences, and laboratory results of the patients. Some aspects of the intervention used herein may be included in the

		lower than in the control group.		planned proposal for a study.
Hailu, F. B., Moen, A., & Hjortdahl, P. (2019). Diabetes self-management education (DSME) – effect on knowledge, self-care behavior, and self-efficacy among type 2 diabetes patients in ethiopia: A controlled clinical trial. Diabetes, Metabolic Syndrome and Obesity, 12, 2489-2499. doi:http://dx.doi.org.ezp.waldenulibrary.org/10.2147/DMSO.S223123	Level II- pretest posttest design	Themes that impacted patient response to DSME were health status, lifestyles, Care provider and care setting, Integration of SME into usual care, and Provider of care, integration of "usual care-SME programs" and SME outcomes	outcomes of SME programs showed positive effects. 19 out of the 21 studies report positive effects on at least one of the outcomes selected for this review. No study report that patients' conditions deteriorated after participating in the SME programs. 10 studies report that the effects of the SME on outcomes were not statistically significant. Our findings, therefore, support the literature that states that the diabetes SME programs produce beneficial effects on patients' behaviors and outcomes	
Macido, A. (2019). A Nurse-Led Inpatient Diabetes Self-Management Education and Support Program to Improve Patient Knowledge and Treatment Adherence. *Journal of Health Education Teaching*, *10*(1), 1–10.	Level II- A descriptive, pretest-posttest study	The study revealed a statistically significant improvement (p = 0.026) in the participants' knowledge of DM after the provision of DSMES while no changes (although not statistically significant, p = 1.00), in the participants' medication adherence.	Implementation of a nurse-led DSMES project has the potential to improve patient knowledge and diabetes self-management skills, which can, in turn, improve treatment adherence and potentially prevent frequent hospitalizations in patients with DM.	Nurses have the duty to deliver effective patient education and

Mackenzie, S. C., Cumming, K. M., Garrell, D., Brodie, D., Wilson, L., Mehar, S., Cunningham, S. G., Bickerton, A., & Wake, D. J. (2020). Massive open online course for type 2 diabetes self-management: adapting education in the COVID-19 era. BMJ Innovations, bmjinnov-2020-000526. https://doi.org/10.1136/bmjinnov-2020-000526	Level I- randomized controlled trial	1991 users registered interest in the course over a 2-week period, with 976 users starting the course and 640 (65.6%) users completing the course in full. Users engaged well, finding the course educational, user-friendly and motivating, demonstrating high completion rates and user satisfaction. A statistically significant (p<0.001) increase in self-reported self-management ability and health knowledge was observed among participants with type 2 diabetes.	MOOCs in type 2 diabetes self-management education has great potential for delivering education efficiently at scale and low cost. Although engagement can be limited by digital literacy, benefits include flexible and remote access to up-to-date, evidence-based education delivered by a multidisciplinary team of healthcare professionals.	Online DSME shows great promise, and MOOCs have the potential to provide social learning in a structured, accessible, and engaging manner. MOOCs are highly efficient and likely cost-effective, with low healthcare resource requirements per user, enabling the release of staff for frontline duties.
Magee, M.F., Baker, K.M., Fernandez, S.J., Huang, C., Mete, M., Montero, A.R., Nassar, C., Sack, P.A., Smith, K., Youssef, G.A., & Evans, S. (2019) Redesigning ambulatory care management for uncontrolled type 2 diabetes: A prospective cohort study of the impact of a Boot Camp model on outcomes. *BMJ Open Diabetes Research and Care 2019;7*:e000731. doi: 10.1136/bmjdrc-2019-000731	II- prospective cohort study (The education was adapted from the American Association of Diabetes Educators.29 It covered healthy eating; glycemic targets and glucose monitoring; taking medications as prescribed; hyperglycemia and hypoglycemia recognition, treatmen,t and prevention; knowing when to seek medical help; lifestyle and other topics identified by the participant or the provider.)	A cohort of 366 Boot Camp participants plus 366 controls were analyzed. Participants were 79% African-American, 63% female, and 59% Medicare-insured or Medicaid-insured and mean age 56 years. Baseline mean HbA1c for cases and controls was 11.2% (99 mmol/mol) and 11.3% (100 mmol/mol), respectively. At 90 days, HbA1c was	This pragmatic technology-enabled Boot Camp intervention demonstrated improvement, among predominantly African-American participants, in glycemic control and reduction in hospitalizations, when compared with concurrent propensity-matched chart control patients receiving usual primary care for diabetes.	The design of the boot camp is something that has the potential to be included in the prospective bundle as it has shown significant improvements in the patients' glycemic control and a decrease in hospitalization risk. That or some concepts or features of the boot camp may be used like the one-click Boot

		8.1% (65 mmol/mol) and 9.9% (85 mmol/mol), p<0.001, respectively. The risk for 90-day all-cause hospitalizations decreased 77% for participants and increased 58% for controls, p=0.036. Mean potential for monetization of US$3086 annually per participant for averted hospitalizations were calculated.		Camp where the patients were directed to short videos after being assessed for knowledge deficits.
Mitchell, S., Bragg, A., Gardiner, P., De La Cruz, B., & Laird, L. (2021). Patient engagement and presence in a virtual world world diabetes self-management education intervention for minority women. Patient education and counseling, S0738-3991(21)00432-8. Advance online publication. https://doi.org/10.1016/j.pec.2021.06.033	embedded, mixed-methods study, using a convergent study design	Around 66% of those from the intervention group reported a sense of social (63.7%, mean 3.7/5.0) and physical presence (63.1%, mean 3.6/5.0), while half \experienced self-presence (49.0%, mean 3.3/5.0) in the virtual world. Themes that emerged from the qualitative data were "(1) Identification with and adoption of the avatar enhances participants' sense of self-presence; (2) Physical presence enhances the experience of immersion, encouraging a growth mindset for learning new skills; (3) Social presence fosters learner engagement, social	The authors concluded that such a platform encourages and enhances patient engagement in chronic disease self-management.	A focus on the efficacy of online platforms to deliver DSME is encouraging as this means there is an easily patient-accessible and relatively cheap way of heightening DSME efforts

		support, and psychological safety in the group session"		
Ni, Y., Liu, S., Li, J., Dong, T., Tao, L., Yuan, L., & Yang, M. (2019). The Effects of Nurse-Led Multidisciplinary Team Management on Glycosylated Hemoglobin, Quality of Life, Hospitalization, and Help-Seeking Behavior of People with Diabetes Mellitus. Journal of diabetes research, 2019, 9325146. https://doi.org/10.1155/2019/9325146	Level -II quasi-experimental trial

The intervention for self-management of diabetic patients included a series of health education classes delivered in a group education format, individualized counseling via telephone and face-to-face follow-up visit, Pamphlet and self-monitoring workbook were handed out. l | During the 24-month project, the intervention group demonstrated a 1.08% reduction in HbA1c, whereas the control group achieved an increase of 0.45%, a statistically significant difference.The intervention group showed greater increased in QOL scores (from 66.43 to 70.47, $P <$ 0.001), more decrease in hospitalization (OR = 2.981, 95% CI: 1.016, 8.752 versus OR = 1.189, 95% CI: 0.411, 3.444; P = 0.028) when compared with the control group. The percentage increase of seeking help from nurses in the intervention group (from 12.5% to 57.3%, $P <$ 0.001) was significantly greater than that in the control group after the intervention. | Nurse-led multidisciplinary team management is an effective intervention for improving glycemic control, QOL, hospitalization, and help-seeking behavior for people with DM in a community. | This design was a 24-month long intervention and significant gains were made. This study will help inform the creation of the bundle for enhancing self-management for patients with uncontrolled diabetes |
| Pamungkas, R. A., & Chamroonsawasdi, K. (2020). Self-management based coaching program to improve diabetes mellitus self-management practice and metabolic markers among uncontrolled type 2 diabetes mellitus in Indonesia: A quasi-experimental study. *Diabetes & metabolic* | Level II- quasi-experimental study, pre-test, and post-test with non-equivalent control group design | The findings showed that patients who received the DMSM based coaching program have a positive effect on DMSM practice and metabolic marker except for body mass index (BMI). | It is an ethical imperative to identify new strategies for adequately treat such conditions and reduce the long-term negative impact on the mothers as well as their babies and family members | This is a protocol that uses an adaption of a well-known evidence-based family psychoeducational model to the treatment of perinatal depression |

syndrome, 14(1), 53–61. https://doi.org/10.1016/j.dsx.2019.12.002		This study revealed that the DMSM based coaching program was practical and feasible for implementation in a broad population with uncontrolled T2DM in Indonesia.		which has been known to work for those with depression. Information from this study will hopefully inform this nurse's capstone in that she can use some parts of educational intervention in designing hers.

Appendix AD

Table 1. Pre (Week 1) and Post (Week 8) DSM Survey on Practices and Knowledge on DSM seven (7) Self Care Behaviors

PRE AND POST SURVEY QUESTION	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8	W1	W8
	P1		P2		P3		P4		P5		P6		P7		P8		P9		P10	
1. I check my blood sugar levels regularly with care and attention.	1	4	3	5	1	4	1	4	1	5	1	5	3	5	3	5	1	4	1	5
2. I record my blood sugar levels regularly	1	4	3	5	1	4	1	4	1	5	1	5	3	5	3	5	1	4	1	5
3. I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	2	5	3	5	1	4	1	4	1	4	1	4	2	5	3	5	1	5	1	5
4. I do regular physical activity to achieve optimal blood sugar levels.	1	4	3	5	1	4	1	4	1	5	1	5	3	4	3	4	2	5	1	5
5. I keep all doctors' appointments recommended for diabetes management (PCP, Endocrinologist, Ophthalmologist, Podiatrist).	4	5	3	5	1	5	1	5	5	5	2	5	2	5	2	5	1	5	1	5
6. Knowledge on 7 Self-Care Behaviors of DSM:																				
1. Healthy Eating	2	4	3	5	2	5	2	5	2	5	2	4	3	4	4	5	2	5	2	5
2. Being Active	3	5	3	5	3	5	3	5	3	5	3	5	3	5	4	5	2	5	2	5
3. Taking Medication	2	5	4	5	2	5	2	5	2	5	2	5	3	4	4	5	2	4	2	5
4. Healthy Coping	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5
5. Problem Solving	1	5	2	5	1	5	1	5	1	4	1	5	3	5	3	5	1	4	1	5
6. Reducing Risks or Complications	2	4	3	5	2	5	2	5	1	5	2	5	2	5	3	5	1	5	2	5
7. Monitoring Blood Sugar	2	5	4	5	2	5	3	5	3	5	2	5	4	5	4	5	1	4	2	5
AVERAGE SCORE	1.83	4.58	2.92	5.00	1.50	4.67	1.58	4.67	1.83	4.83	1.58	4.83	2.67	4.75	3.08	4.92	1.33	4.58	1.42	5.00
% Increase	60.00%		41.67%		67.86%		66.07%		62.07%		67.24%		43.86%		37.29%		70.91%		71.67%	
REMARKS	I		I		I		I		I		I		I		I		I		I	

Appendix AE

Table 2. Pre (Week 1) and Post (Week 8) DSM Survey on Participants DSM Practices

QUESTIONS	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc
1. I check my blood sugar levels regularly with care and attention.	300.00%	66.67%	300.00%	300.00%	400.00%	400.00%	66.67%	66.67%	300.00%	400.00%
2. I record my blood sugar levels regularly	300.00%	66.67%	300.00%	300.00%	400.00%	400.00%	66.67%	66.67%	300.00%	400.00%
3. I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	150.00%	66.67%	300.00%	300.00%	300.00%	300.00%	150.00%	66.67%	400.00%	400.00%
4. I do regular physical activity to achieve optimal blood sugar levels.	300.00%	66.67%	300.00%	300.00%	400.00%	400.00%	**33.33%**	**33.33%**	150.00%	400.00%
5. I keep all doctors' appointments recommended for diabetes management (PCP, Endocrinologist, Ophthalmologist, Podiatrist).	**25.00%**	66.67%	400.00%	400.00%	**0.00%**	150.00%	150.00%	150.00%	400.00%	400.00%

Appendix AF

Table 3. Pre (Week 1) and Post (Week 8) DSM Survey on Participants Self Care Behaviors

QUESTIONS	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
	% Inc	% Inc	%Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc	% Inc
Healthy Eating	100.00%	66.67%	150.00%	150.00%	150.00%	100.00%	**33.33%**	**25.00%**	150.00%	150.00%
Being Active	66.67%	66.67%	66.67%	66.67%	66.67%	66.67%	66.67%	**25.00%**	150.00%	150.00%
Taking Medication	150.00%	**25.00%**	150.00%	150.00%	150.00%	150.00%	**33.33%**	**25.00%**	100.00%	150.00%
Healthy Coping	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%	400.00%
Problem Solving	400.00%	150.00%	400.00%	400.00%	300.00%	400.00%	66.67%	66.67%	300.00%	400.00%
Reducing Risks or Complications	100.00%	66.67%	150.00%	150.00%	400.00%	150.00%	150.00%	66.67%	400.00%	150.00%
Monitoring Blood Sugar	150.00%	**25.00%**	150.00%	66.67%	66.67%	150.00%	**25.00%**	**25.00%**	300.00%	150.00%

Appendix AG

Table 4. Close Follow-up of Patients with Their PCP, Endocrinologist, Ophthalmologist, and Podiatrist

FOLLOW - UP	P1			P2			P3			P4			P5		
	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8
PCP	Oct-21	Feb-22	**Feb-22**	Dec-21	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Dec-21	Feb-22	**Feb-22**	Nov-21	Feb-22	**Feb-22**
Endocrinologist	Oct-21	Oct-21	**Oct-21**	Dec-21	Dec-21	**Dec-21**	N	Feb-22	**Feb-22**	Dec-21	Dec-21	**Dec-21**	Nov-21	Nov-21	**Nov-21**
Ophthalmologist	Oct-21	Oct-21	**Oct-21**	Dec-21	Dec-21	**Dec-21**	N	Feb-22	**Feb-22**	Dec-21	Dec-21	**Dec-21**	Nov-21	Nov-21	**Nov-21**
Podiatrist	Oct-21	Oct-21	**Oct-21**	Dec-21	Dec-21	**Dec-21**	N	Feb-22	**Feb-22**	Dec-21	Dec-21	**Dec-21**	Nov-21	Nov-21	**Nov-21**

| FOLLOW - UP	P6			P7			P8			P9			P10		
	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8	WEEK 1	WEEK 4	WEEK 8
PCP	Nov-21	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Aug-21	Feb-22	**Feb-22**	Sep-21	Feb-22	**Feb-22**
Endocrinologist	Nov-21	Nov-21	**Nov-21**	N	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Aug-21	Feb-22	**Feb-22**	Sep-21	Feb-22	**Feb-22**
Ophthalmologist	Nov-21	Nov-21	**Nov-21**	N	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Aug-21	Feb-22	**Feb-22**	Sep-21	Feb-22	**Feb-22**
Podiatrist	Nov-21	Nov-21	**Nov-21**	N	Feb-22	**Feb-22**	N	Feb-22	**Feb-22**	Aug-21	Feb-22	**Feb-22**	Sep-21	Feb-22	**Feb-22**

Appendix AH
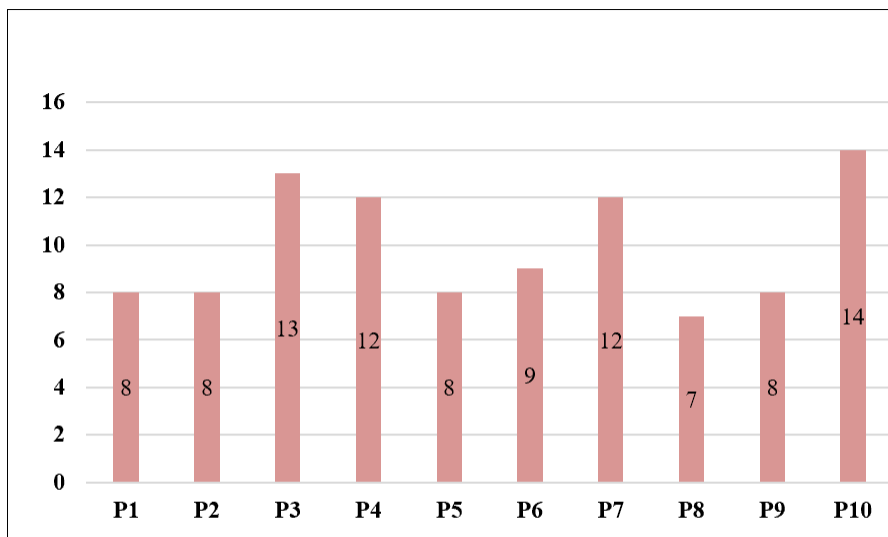
Figure 2. Weight (lbs) Difference of Patients after 8 weeks
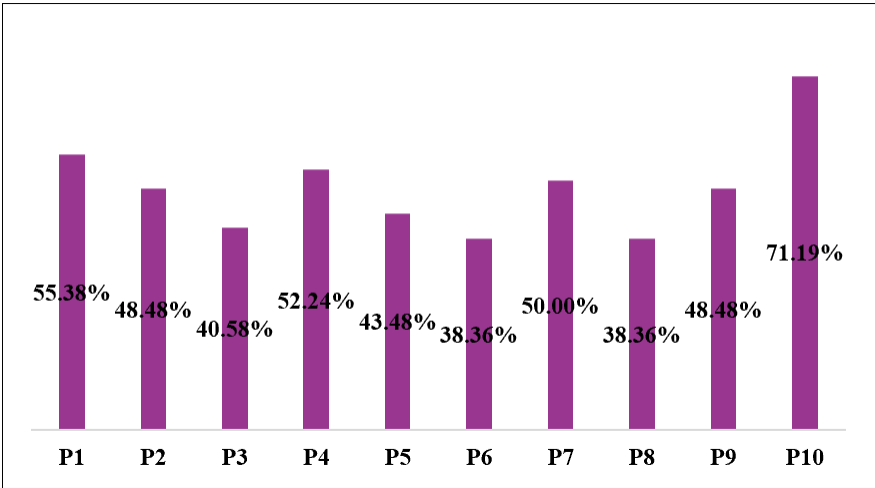
Appendix AI

Figure 3. Percent (%) Increase in Knowledge of Patients on Discussed Topics after 8 Weeks