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Evaluating a Participatory Education Program for Underserved Patients with Type 2 Diabetes

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Evaluating a Participatory Education Program for Underserved Patients with Type 2 Diabetes

DNP Scholarly Project Paper

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF NURSING PRACTICE

in Nursing Science

by

Loressa Kathryn Wenger

DNP Project Team:
Professor Miriam Bender, Chair
Associate Professor Nicole Martinez
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2022

DEDICATION

To

my incredible husband, Austin Wenger

thank you for your unconditional love and unwavering support

for inspiration

"The roots of education are bitter but the fruit is sweet"

[Aristotle]

and for perseverance

"I may have been swallowed but I have no intention of being eaten"

[Mac Barnett
The Wolf, The Duck, and The Mouse]

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Doctor of Nursing Practice, Family Nurse Practitioner in Nursing Science

ABSTRACT OF THE DNP SCHOLARLY PROJECT PAPER

Evaluating a Participatory Education Program for Underserved Patients with Type 2 Diabetes

by

Loressa Kathryn Wenger

Doctor of Nursing Practice, Family Nurse Practitioner in Nursing Science

University of California, Irvine 2022

Professor Miriam Bender, Chair

Type 2 diabetes affects about every 1 in 10 Americans and is a global epidemic (CDC, 2020). Type 2 diabetes is a multifactorial disease that involves multiple aspects of the patient's life need to be monitored, including diet, exercise, monitoring blood sugars and taking medications as prescribed. Most of this care is done solely by the patient without the direct supervision or help of the clinician which forces education to be an essential task to grasp by the patient. Underserved populations diagnosed with type 2 diabetes are at larger risk for life-altering consequences, including death, due to ineffective education that doesn't allow them to fully understand how to manage this disease (Thurston et al., 2015).

The purpose of this DNP Scholarly Project is to look at a different way of educating underserved patients with type 2 diabetes about their disease in order to increase knowledge and compliance with their diabetic regimens in order to create life-sustaining habits to improve their health for years to come. This different way of education comes in the form of participatory education. Participatory education allows the education to become patient-centered and

empowers the patient to name their problems and transform themselves in the process of changing their behavior through games, skill building, role playing, focus groups and more hands-on activities. Incorporating participatory education allows a more even playing field for all participants to learn by eliminating the need for the patient to read or write. This DNP Scholarly Project's goal was to evaluate an outpatient participatory educational program for underserved patients with type 2 diabetes and compare it to the literature standard. However, due to the Covid-19 pandemic, the outpatient classes were postponed and therefore the project had to pivot. Instead, I evaluated an outpatient participatory educational class for underserved patients with hypertension and compared that to the literature. I also looked at my original Logic Model, which was rigorously and systematically formulated based on the literature review for the diabetes classes, and used it to determine if it was comprehensive and applicable to the new, hypertension intervention or if there were significant differences. Then the Logic Model was refined and results discussed for future interventions of the Logic Model.

CHAPTER 1: INTRODUCTION

Evaluating a Participatory Education Program for Underserved Patients with Type 2

Diabetes

Type 2 diabetes affects about every 1 in 10 Americans and is a global epidemic (CDC, 2020). There are approximately 80,000 deaths annually due from type 2 diabetes in America alone. This is more deaths from AIDS and breast cancer combined. (Berry, 2019). Type 2 diabetes is a complex disease that involves many aspects of care and yet, is completely manageable. Knowing these statistics as stated above, there is clearly a gap in the education that a diabetic has in order for them to properly manage this disease. Unfortunately, underserved populations diagnosed with type 2 diabetes are at larger risk for life-altering consequences, including death, due to ineffective education that doesn't allow them to fully understand how to manage this disease (Thurston et al., 2015).

Background/Significance

The practice and delivery of healthcare is argued to be fundamentally and critically dependent on effective and efficient education (Vermeir et al., 2015). Research has shown that quality education improves patient satisfaction, compliance, and recall and has a direct relationship on health outcomes (Verhaak et al., 1998). Clear and unambiguous education is needed in order for patients to develop self-efficacy and confidence in making decisions for themselves, especially with the rise of new and complex technologies. Substandard quality education results in unnecessary testing, polypharmacy, inefficient use of valuable resources, inappropriate and repeated referrals as well as compromising patient safety and patient satisfaction. Therefore, it's imperative that patients be educated at the highest standards with the

best communication methods in order to validate comprehension and learning and subsequently yield positive behavioral changes.

Traditionally, written education remains the most prevalent form of education between patients and their practitioners, (Vermeir et al., 2015). It is the most basic form of non-verbal communication when information about a certain element of care, such a diabetes maintenance, is written down on a document or pamphlet and handed to a patient. Written instructions are beneficial in that it is an immediate medium used for future reference purposes and can be easily and simultaneously distributed to other patients or caregivers involved in the care process. However, when written instructions are given to a patient, the health literacy level of that patient must be considered. According to research from the U.S. Department of Education, only 12 percent of English-speaking adults in the United States have proficient health literacy skills. The impact of limited health literacy disproportionately affects lower socioeconomic and minority groups (National Action Plan, 2019). Further, a patient's health literacy score is associated to medication adherence and behavioral changes (Thurston et al., 2015). As a result, written instructions used as education are often seen as "unsatisfactory" and lack accurate or comprehensive education regarding the patient's diagnosis, treatment, and medication.

A promising, new approach to educating patients is participatory education. Participatory education seeks to empower patients by putting their needs and experiences at the center of attention, (Christoffersen et al., 2018). Here, educators use a collaborative approach in which participant–educator relationships are characterized by shared responsibility for learning and an emphasis is put on participants' values and concerns all while eliminating the hierarchal relationship between educators and participants (Stenov et al., 2016). Participants are actively involved in the lesson being taught through games or role-play scenarios and engage in group

discussions to reflect on their own situations in order to develop confidence and change their behaviors accordingly. One study compared four diabetes educational courses, two of these courses being the traditional "talk and chalk" style of education involving only verbal and written instructions while the other half involved participation from the diabetic patients through reflective groups, short written assignments, games and motivational speaking. The study found inverse associations between high volume of educator talk time and participants' perception of benefits from the program while those involved in the participatory educational classes perceived a larger sense of benefit (Stenov et al., 2016).

Participatory education allows the education to become patient-centered and empowers the patient to name their problems and transform themselves in the process of changing their behavior. When a patient is able to actively engage in the lesson while interacting with others and participating in discussions, self-efficacy is formed. Self-efficacy is the core of psychological determinants of behavior and therefore directly influences behavioral change, (Lin & Wang, 2013). Participatory education builds self-efficacy which in turn may be a more effective way to educate patients than written instructions only.

Diabetes is a complex, multi-factorial disease that involves adjustments and corrections from various aspects of a patient's life making it challenging for a diabetic to adhere to a strict regimen to decrease the risk of adverse outcomes. To achieve effective diabetes control, type 2 diabetics are educated to eat a healthy diet, exercise regularly, monitor blood glucose, and take 'medications as prescribed. Most of this care is done solely by the patient without the direct supervision or help of the clinician which forces education to be an essential task to grasp by the patient (Lin & Wang, 2013). Federally qualified health centers (FQHC) are safety net providers that provide services to a medically-underserved area or to medically-underserved populations

with incomes below 200 percent of the Federal poverty level (Federally Qualified Health Centers, 2018). For type 2 diabetic patients in an underserved community, literacy, educational and cultural factors can contribute to a challenging educational environment and the risk of diabetic complications due to lack of comprehending the education is greater among the underserved populations (Ruggiero et al., 2010). Therefore, a participatory approach to education might be more beneficial than a written-only approach for underserved type 2 diabetics. For example, one study showed that underserved type 2 diabetics who received written instructions only on how to manage their disease had significantly lower adherence scores at their 3 and 12-month follow-ups than those who engaged in participatory education, (Christoffersen et al., 2018).

Problem Statement

According to the Center for Disease Control and Prevention (CDC), more than 34 million Americans have diabetes, effecting about 1 in every 10 people and approximately 90-95% of this population has type 2 diabetes (CDC, 2020). In type 2 diabetes, cells don't respond normally to insulin and have a resistance to this hormone. As a result, the pancreas secretes more insulin to try to get the cells to respond but eventually the blood sugar rises and can pose significant health risks. Managing this disease is a multifactorial process that involves change in almost every aspect of a type 2 diabetic's life, however it is possible to combat this disease. Taking back control of a patient's life from type 2 diabetes starts with educating themselves on the disease and the proper steps to fight serious health consequences from uncontrolled sugars rising. With 1.5 million new cases of type 2 diabetes in 2018 (Statistics Report, 2020) there is clearly a misunderstanding on how one can control their disease. Participatory education is a type of learning modality that includes engaging patients in hands on learning techniques, having

discussions in small groups, playing games and finding support amongst their peers. It is a promising way to ensure knowledge is obtained and applied to create sustained behavioral changes versus written instructions only.

CHAPTER II: BODY OF EVIDENCE

Review of Literature

Search Process

For this DNP project, studies needed to be collected and evaluated to determine if participatory education for ambulatory type two diabetics in underserved communities yields more of a behavioral change than written instructions only. The studies were searched through the following databases: PubMed, ERIC, CINAHL Complete and Scopus. PubMed is an online library with millions of studies for biomedical literature, science journals and books. ERIC contains research and information regarding education strategies and studies. CINAHL Complete is a database tailored to nursing and health professionals. Scopus is an online resource that contains studies, books, and peer-reviewed journals about numerous different subjects.

In order to refine the search, only certain terms were used. The following search terms were used: participatory education, community education, Type 2 diabetics, Type 2 Diabetes, empowerment program, empowerment education, and education. These terms were limited to being used in the Title/Abstract of the study. However, there wasn't a limit on dates for the searches and therefore some studies date back to 1986.

The articles that are used for the literature review will be articles or studies done from all around the world. It includes every design of study as inclusion criteria. The search was filtered based on population. The population that warrants inclusion criteria include adults with type 2 diabetics that are ambulatory. The setting was also filtered and included participants that

currently live in what would be described as an underserved population. This can be defined as those who receive Medicaid, receive medical help from a federally qualified health center (FQHC) or those whose income is below the federal poverty level for their country.

All 19 studies that met the above inclusion criteria used participatory education in the form of group discussions, learning modules and a hand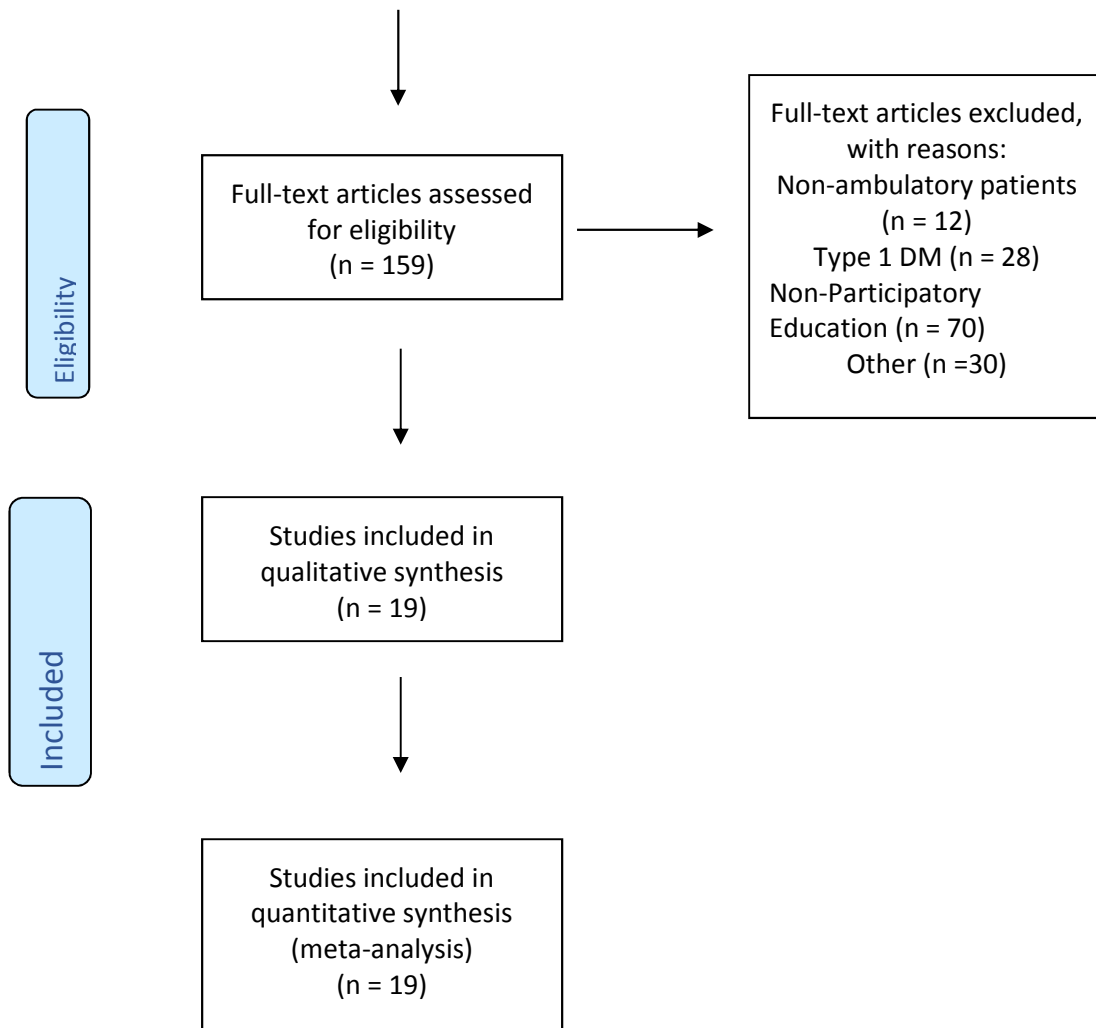s-on activity. All 19 studies taught the fundamentals of type 2 diabetes including basic knowledge about the disease, treatment, care, and complications of the disease. All 19 studies that met inclusion criteria believed it was important to test knowledge and, more importantly, to show a behavioral change. Knowledge was typically measured through the use of a pre-post design and with survey instruments. Behavior change was typically measured through self-assessment of activities before and after the intervention and/or health indicators such as Hemoglobin A1C (HbA1C), Body Mass Index (BMI), weight, blood pressure (BP), cholesterol and testing fasting blood glucose. This is illustrated in the PRISMA Consort Diagram below.

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                    ↓
┌──────────┐   ┌─────────────────────┐        ┌──────────────────────────┐
│          │   │  Full-text articles │        │ Full-text articles excluded,│
│          │   │    assessed         │───────▶│      with reasons:         │
│Eligibility│   │   for eligibility   │        │ Non-ambulatory patients    │
│          │   │     (n = 159)       │        │        (n = 12)            │
│          │   └─────────────────────┘        │  Type 1 DM (n = 28)        │
└──────────┘            │                      │  Non-Participatory         │
                        │                      │  Education (n = 70)        │
                        ▼                      │      Other (n =30)         │
                ┌─────────────────────┐        └──────────────────────────┘
                │  Studies included in │
                │ qualitative synthesis│
                │      (n = 19)        │
┌──────────┐   └─────────────────────┘
│          │            │
│ Included │            │
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│          │   ┌─────────────────────┐
└──────────┘   │  Studies included in │
                │ quantitative synthesis│
                │   (meta-analysis)    │
                │      (n = 19)        │
                └─────────────────────┘
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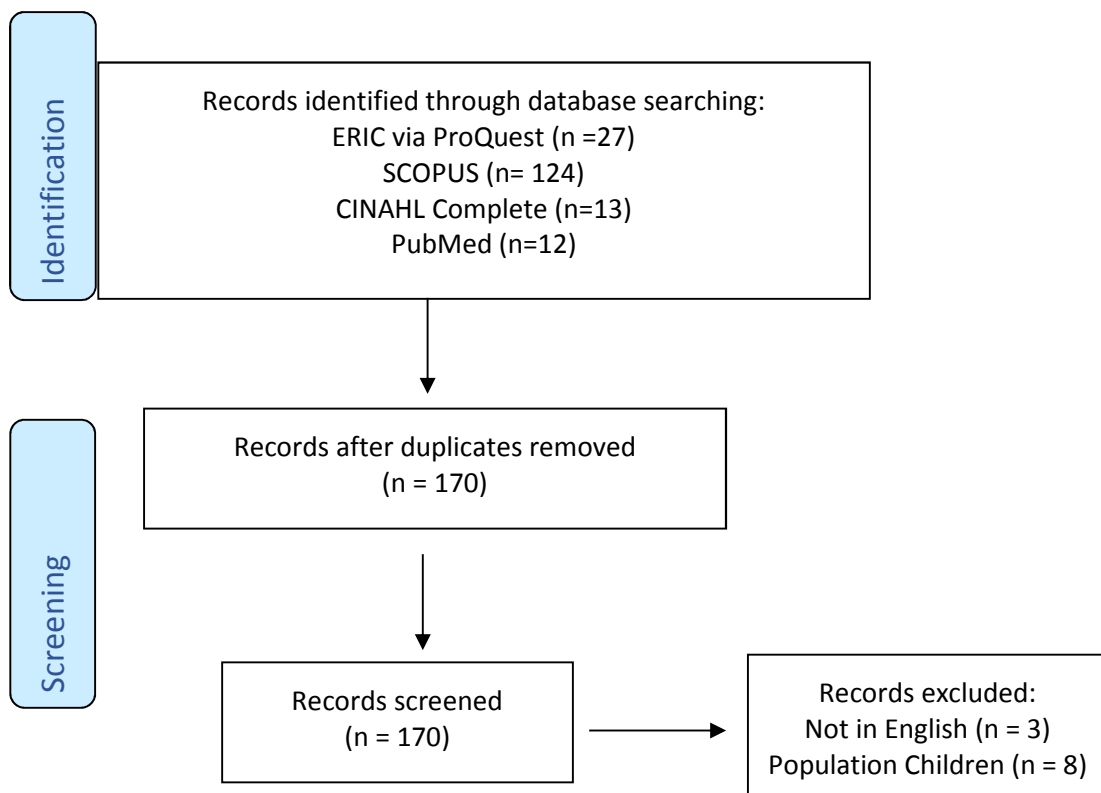
Appraisal of Evidence

All 19 of the studies looked at a behavior change in some way. 11 studies analyzed behavior changes made from the intervention through health indicators (eg. change in HbA1C, BMI, weight, BP, cholesterol, etc.) while 8 studies measured behavior change by testing knowledge before and after the intervention through pre and post intervention surveys. The studies that used health indicators to assess learning did so because they argued that after the intervention was completed and the participant learned a knew skill or fact about type 2 diabetes, they would be motivated to improve their habits regarding the disease. This would then result in improvements in diabetic-associated labs (eg. BMI, weight, cholesterol, HbA1c, etc). These health indicators were taken prior to the initiation of the intervention on each participant for a

comparison and then after the intervention was completed. Interestingly enough, there weren't any studies that measured these health indicators during the intervention in order to gauge if the participant was learning.

The analysis of the 19 studies included in the literature review showed that it's important to test knowledge after an intervention is concluded but it's also important to assess behavioral change of the participants. Knowledge is nothing without the action behind it. In order for a sustainable change to be made, basic knowledge needed to be acquired to make a conscious decision to create a life-long change. In order for knowledge to be put into action, the patient needs to have motivation that they can implement the changes they were taught during the intervention study. This motivation comes from within and is called self-efficacy. Although knowledge and self-efficacy have a causal relationship, they are different. It's important to note that without the motivation or self-efficacy behind the knowledge, a change in behavior may result from an intervention but it will not be sustained over a long period of time. As important as this concept is during the review of the literature, only 6 articles studied self-efficacy and the change in behavior in participants for 12 months or longer. This leaves room for improvement on following up with participants longer than 12 months after an intervention is completed to measure an actual change in habits.

Participatory Approaches

The following table summarizes the types of participatory interventions that emerged from in the studies conducted in the literature review.

	Focus Groups	Conversation Maps	Cooking Food	Interactive Videos	Discussion Cards	Physical Exerise	Unspecified
Vjin et al., 2018	X						
Kewming et al., 2016		X	X				
Secco et al., 2019	X						
Stenov et al., 2016	X						
Christoffersen et al., 2020	X						
Pals et al., 2016	X						
Flores-Luevano et al., 2020							X
Molsted et al., 2012				X			
Cox & Corbin et al., 2011			X				
Grenci, 2010		X			X		
McElfish et al., 2019				X			
Aekplakorn et al., 2019							X
Ibrahim et al., 2016	X						
Voigt et al., 2014		X		X			X
Yazdanpanah et al., 2012						X	
Balagopal et al., 2012	X		X			X	
Castillo et al., 2010	X						
Adolfsson et al., 2008	X						
Falkenberg et al., 1986	X						

AADE 7 Self-Care Behaviors

Diving further into the evidence, it has shown that there is already an evidence-based model on certain self-care behaviors that is recommended to be studied when educating a type 2 diabetic about their disease. The American Association of Diabetes Educators (AADE) argues that these seven behaviors need to specifically be addressed during the educational process of a type 2 diabetic in order for them to more greatly adhere to the education and change their behavior. This education is explained through the document The AADE 7 Self-Care Behaviors by the American Association of Diabetes Educators and identifies diabetes-specific self-care behaviors that promotes management education to support behavior change. These seven self-care behaviors are healthy coping, healthy eating, being active, taking medications, monitoring, reducing risk and problem solving. The AADE suggests that these self-care behaviors promote successful and effective diabetes self-management education using person-centered and self-determined goals to address and support behavior change and affect clinical and health-related

outcomes ("An Effective Model of Diabetes Care and Education: Revising the Aade7 Self-Care Behaviors®," 2020).

Because a successful evidence-based educational model for type 2 diabetics already exists, it's important to keep in mind how one can use participatory education while also including these self-care behaviors to yield an even more successful outcome of type 2 diabetics adhering to their diabetic regimen and changing their behaviors.

Comprehensive Synthesis of Evidence

All 19 of the studies looked at a behavior change in some way. 11 studies analyzed behavior changes made from the intervention through health indicators (eg. change in HbA1C, BMI, weight, BP, cholesterol, etc) while 8 studies measured behavior change by testing knowledge before and after the intervention through pre and post intervention surveys. The studies that used health indicators to assess learning did so because they argued that after the intervention was completed and the participant learned a knew skill or fact about type 2 diabetes, they would be inclined to change their bad habits regarding the disease. This would then result in improvements in diabetic-associated labs (eg. BMI, weight, cholesterol, HbA1c, etc). These health indicators were taken prior to the initiation of the intervention on each participant for a comparison and then after the intervention was completed. However, none of the studies measured these health indicators during the intervention in order to gauge if the participant was learning.

11 studies used pre and post surveys in addition to health indicators as a measurement of learning during their study. These surveys were used both prior to the initiation of the intervention as a comparison and then after the intervention was completed in order to measure

the amount of knowledge that was acquired during the study. None of the studies that were included in this literature review used surveys during the intervention period.

12 studies measured self-efficacy or motivation that the participant experienced in order to sustain a particular behavioral change. Self-efficacy is a person's belief in his or her ability to succeed in a particular situation and it is argued that it is almost more important than the actual behavior change itself (Carey & Forsyth, 2009) for without self-efficacy, the change in behavior would not continue. Self-efficacy is the assurance that the participant being studied will follow through with a particular behavioral change for an extended period of time.

Some surveys or questionnaires were used to measure a participant's self-efficacy during the intervention and include the Diabetes Empowerment Scale, the Stanford Patient Education Research Center's Diabetes Self-Efficacy Scale and using the Diabetes Empowerment Education Program (DEEP).

Summary of Evidence

The analysis of the 19 studies included in the literature review showed that it's important to test knowledge after an intervention is concluded but it's also important to test behavioral change of the participants.

12 out of the 19 studies did not take place in the United States with 5 of these studies taking place in Denmark. This suggests that there is a real lack of focus on participatory education for type 2 ambulatory diabetics in underserved communities in this country and warrants more studies needing to be implemented to see how this particular population fairs. However, all 19 studies suggested that participatory education yields more motivation for change and sustains change overtime proposing that any studies done in the United States would theoretically have the same result as those completed in other countries.

When looking at the activities that were included in participatory education, 9 of the studies used focus groups and class discussions as their participatory approach in their intervention. This accounts for the majority of the studies. Other participatory activities included conversations maps (Kewming et al., 2016 & Grenci, 2010), physical exercise (Yazdanpanah et al., 2012 & Balagopal et al., 2012), cooking (Cox & Corbin 2011 & Balagopal et al., 2012), and interactive videos (McElfish et al., 2019 & Molsted et a., 2012). Interestingly enough, two studies didn't specifically mention their participatory activity and instead described it as "group based activities"

12 studies included self-efficacy in their study. This shows that there is a need to teach and test an underlying motivational attitude for these participants in order to sustain a long-term behavioral change. However, not all of these studies that included self-efficacy had a longitudinal follow-up past 12 months to verify that the participants' change in behavior was still continued. This leaves room for improvement on following up with participants longer than 12 months after an intervention is completed to measure an actual change in habits. Information regarding the articles found to complete this literature review can be found below.

Author (Year)	Population	Sample/Setting	Intervention Led By	Intervention	What did the Intervention Teach?	Place of Study	Behavior Change that is being Measured	Studies used for intervention	How has been Measured the Behavior Change	Findings	Limitations	Self Efficacy?	Involved Family?	URL	Appraisal of Articles

CHAPTER III: PROJECT FRAMEWORK

Evidence-Based Practice Model

The Ottawa Model is an interactive model that depicts research as a dynamic process of interconnected decisions made and actions taken by stakeholders (Graham & Logan, 2004). It is composed of three phases: assess barriers and supports, monitor intervention and extent of use and evaluate the outcomes. The content for this education has already been clearly delineated through the AADE 7 self-care behaviors. It is highly evidenced based in terms of the content that it will provide. See Chapter II AADE 7 Self-Care Behaviors for more details. The evidenced based participatory approaches that we will use will be assessed and delineated through the literature review. See Participatory Approaches Table in Chapter II for details.

Refer to Chapter I in this paper under Background and Significance to investigate the barriers and supports to this project. To further understand how the intervention will be monitored and the outcomes are evaluated, please refer to the Logic Model below and Chapter IV of this paper under Description of the Intervention.

Logic Model

The literature review revealed what was important to implement and the next step was to make sure I was going to implement this knowledge in a systematic and robust way. The way to do this is by constructing a Logic Model. The Logic Model is a principle-guided tool used to enhance the rigor and transparency of describing complex processes of certain scholarly projects (Smith et al., 2020). Its framework has been adopted by various entities such as the U.S. Department of Health and Human Services and Center for Disease Control and Prevention (CDC). The following figure illustrates the Logic Model for my DNP Scholarly project and shows the relationship between using participatory education on the target population to create

self-efficacy to yields behavioral changes over time which results in controlling or reversing type 2 diabetes.

The following table illustrates the operationalization of the Logic Model. The table corresponds and operationalizes to a specific part of the Logic Model. For example, the target population here is ambulatory underserved patients with type 2 diabetes. The participatory education includes the resources, specific activities done during the classes and the outputs. Self-efficacy is operationalized by the short-term outcomes which, when followed and practiced yields behavioral changes as seen by the intermediate outcomes. Whether the chronic disease (in this case type 2 diabetes) is controlled or reversed is evidenced by the long-term outcome. for example, a sustained decrease in HbA1c, weight, cholesterol, BP and fasting blood sugar. These are all attained over the long term through sustained behavioral changes through daily habits.

Target Population	Participatory Resources/Inputs	Participatory Activities	Participatory Outputs	Short-term Outcomes	Intermediate Outcomes	Long-term outcomes
T2DM ambulatory patients in underserved communities	Classroom	Powerpoint	% of people that come to eductional classes	Changes in learning via Surveys (Self-Reported)	Applying skills todaily life via self-reports	Decrease in HbA1C
FQHC, uses Meidcare, Federal Poverty Line	Teachers/Educators	Discussion groups	% of patients that participate in activities	Changes in skills	Self-reported behavioral changes via phone interviews	Decrease in weight
Patients who want mor einformaiton on how to gain tighter control of T2DM	Tables & chairs	Conversation Map	% of patients that retain information from classes	100% attendance record for each class	Changes in weight	Improved BP
Patients who may or may not have uncontrolled T2DM or HbA1C	Participants	Tests/Quizzes	% of patients that complete work that is assigned to do at home	100% engagement in activities via educator's observations	Changes in fasting blood sugar	Improved fasting blood sugar
	Writing materials	Engages Participants			Improved BMI	Improved cholesterol
	Zoom account	Pre and Post Program Surveys				Sustained behavioral changes via change in daily habits
	Computer, tablet or phone that can utlize Zoom					
	Internet or WiFi					

Resources & Inputs

To conduct in-person participatory educational learning, some resources are needed. First and foremost, there must be a teacher or educator for every class to educate the participants, lead discussions and distribute homework or take-home activities to individuals for continued learning. A qualified educator to run these classes can have many different backgrounds. One study (Vijin et al., 2018) utilized medical and nursing students under the supervision of their instructors while other studies used trained community health workers (Castillo et al., 2010; Balagopal et al., 2012; Flores-Luevano et al., 2020; Yazdanpanah et al., 2012). In fact, only 4 studies that met inclusion criteria used a nurse and/or a doctor to educate the participants in these classes (Adolfsson et al., 2008; McElfish et al., 2019; Molsted et al., 2012; Stenov et al., 2016). This may suggest that the training of the educator is more significant than their educational background.

In addition to the educators, there will need to be participants for the classes to run. The target population of these classes are ambulatory type 2 diabetic patients in underserved communities. "Underserved communities" means that the patient may receive their care from a federally qualified health center (FQHC) which provides comprehensive services to an underserved area or population, qualifies for reimbursement from Medicare and Medicaid and qualifies for federal funding (FQHC, 2021). A participant can also be considered "underserved" if they are utilizing Medicare services or their annual income falls below the federal poverty line. Other participants that can engage in these participatory classes are those who want more information on how to gain tighter control of type 2 diabetes and those who may or may not have uncontrolled type two diabetes or an elevated Hemoglobin A1C (HbA1C).

A physical environment will be needed to conduct these classes. A classroom will be most beneficial to decrease outside distractions and create a community atmosphere for the participants. Other resources include writing materials (pen, pencil, paper, etc) for patients to take notes while the educator is teaching the lesson.

The resources change for at-home participatory educational classes for type 2 diabetics and include having a Zoom account, a computer, tablet, or phone that can utilize Zoom and internet or WIFI to connect to Zoom. Zoom will be the platform in which the patients will be engaging in these classes and therefore it is vital for them to connect to this application to participate in the lesson.

Activities

Activities that are involved in this study are evidence-based and are participatory in nature, gearing towards the underserved type 2 diabetic population. Refer to Chapter II Participatory Approaches table for a summation of the participatory activities that were conducted in the literature review and have been mirrored in this study. The way that we are going to ensure that we are delivering these activities through an evidence-based approach is through the activities found in the literature review. The literature review showed that focus groups were conducted in 9 out of the 19 studies as their method of participatory education and 77% of these studies had a direct influence on self-efficacy while 100% of them resulted in an influence in a health indicator of some kind (eg. BMI, weight, HbA1c, etc). As a result, focus groups will be utilized in this study as a participatory educational method while also incorporating other methods as seen in the Participatory Approaches table.

The foundation of participatory education stems from hands-on activities where participants are actively involved in the lesson being taught through games or role-play scenarios

and engage in group discussions to improve their knowledge, develop self-efficacy, and change their behaviors accordingly. Therefore, it's important that there is a plethora of activities for the participants to engage in in order for every patient to learn as much as possible. One of these activities includes PowerPoints with basic knowledge content about type 2 diabetes. These PowerPoints will appeal to the audio and visual learners of the class. Discussion groups, team exercises and other activities that engage participants will be utilized to include kinesthetic-tactile learners. Other activities that will be employed during these classes include tests, quizzes, and pre and post surveys to investigate what the patient has learned and identify areas for improvement. Another unique activity that can be included are Conversation Maps. These are table-top visual tools that serve as focal points and have been shown to increase knowledge attained from a lesson in various studies (Grenci, 2010; Kewming et al., 2016).

Output

In conducting participatory educational classes, we hope to yield some positive effects. First, we hope that people come to these classes that are being run. Next, we hope that the type 2 diabetics will participate in the activities. And lastly, we hope that these patients retain the information from the educational classes to use in their everyday lives as evidenced by behavioral modification and improved health indicators.

Short-Term Outcomes

The outcomes are separated into short, intermediate and long-term measurements. For the short-term outcomes, we expect to see a change in knowledge that can be evidenced by self-reported surveys. We also expect to see a behavioral change, varying from how to choose a healthy meal to more complex skills, such as properly using and interpreting glucometer readings.

Intermediate Outcomes

Intermediate outcomes are more complex than short-term outcomes because we expect that the participants will be applying their skills learned during their educational classes to everyday life, seeing greater changes in their physical and mental health over longer periods of time. These outcomes include a decrease in body weight, body-mass-index (BMI), and fasting blood glucose levels.

Long-Term Outcomes

Once the activity and lesson are completed and the patient has learned a new fact about their disease or has mastered a skill, we presume this to continue for the long-term. We hypothesize that these classroom activities will unfold in behavioral changes outside of the classroom through self-efficacy and motivational techniques. These techniques will also be taught in the classes and we expect them to be used in patient's daily lives to ensure that these skills and knowledge be applied regularly. Such outcomes include a decrease in HbA1C, improved blood pressure, improved cholesterol, and sustained behavioral changes as seen through their daily habits. 13 out of the 19 studies looked at their intervention's effects on the participants and measured these physical long-term outcomes. Therefore, we suggest that attaining physical long-term benefits from consistent participatory educational classes is realistic and achievable.

External Influences

We anticipate some external influences to either influence neglection or adherence to our type 2 diabetic participatory classes. Such influences that could create a problem in physically getting to the in-person classes include problems with scheduling, unforeseen hospitalizations or transportation issues. Patient's that are unable to afford technology resources for at-home

educational classes will have difficulty coming to class, participating in class, and learning from the lessons. Social and family support are external influences that can sway a patient to either adhere to the classes or disregard them. However, it was seen in several studies that encouraging family members to participate in these classes, (whether they have type 2 diabetes or not), directly influenced the success of the type 2 diabetic patient (Secco et al., 2019; Molsted et al., 2012; Grenci, 2020; Yazdanpanah et al., 2012).

CHAPTER IV: METHODS

Project Purpose

The purpose of this project is to evaluate a participatory education program for underserved type 2 diabetics. As stated above, both written instructions and participatory education have positive and negative aspects to them; however, according to the research, written instructions are used more often than participatory education. Seeing as how there is still a gap in type 2 diabetics adhering to their medication regimens, especially those in underserved populations, it may be time to transition to participatory education to teach this population.

This project will engage participants that meet certain criteria into participatory educational classes to build upon their knowledge about their type 2 diabetes. These classes will ensure that every participant has an equal opportunity to learn the material through the various different learning modalities that it utilizes. After the data is collected and analyzed to ensure that knowledge is gained, (via quizzes, participation and homework), it will be evaluated to be sure that this combined approach works in practice.

Project Goals

See Chapter III: Project Framework for the list of short, intermediate and long-term outcomes.

Project Description

Project Type/Design

      This project's goal is to evaluate a participatory education program for underserved type 2 diabetics. The education program that will be evaluated is an already established program that is run by a facility that is committed to educating underserved type 2 diabetics through participatory programs. The data will be collected through observation, grading certain documents and reviewing patient's charts.

Project Timeline

      The timeline for the projects is as follows:

      Patients who meet eligibility criteria will be asked to participate in these classes from November 2021 to February 2022. Those who are not able to participate in these classes will be given written instructions on how to properly manage their diabetes. These written instructions will cover the topics that the other group will be engaging in during the classes. The participatory classes will be implemented from February 2022 to May of 2022. From April to May of 2022, the data that was collected during the intervention will be analyzed. In June 2022, the findings of the intervention will be shared to the stakeholders for improvement of these classes. See Gantt Chart in Appendix F for a visual of the timeline.

Project Setting/Population

      This project is being conducted at the FQHC in Anaheim, California in their conference room. The project population will consist of type 2 diabetic adults that receive their primary care from the Federally Qualified Health Center (FQHC) in Anaheim, California or Santa Ana, California. In order to be considered eligible for this project, the type 2 diabetic must be at least 18 years old. They must be ambulatory and receive their care from the FQHC in Anaheim or

Santa Ana, California. The patient can be Spanish or English speaking and does not have to know how to read or write. Patients regardless of HbA1C are invited to participate in this study as long as they meet the eligibility criteria stated above, however, the computer system will flag patients with a HbA1C of 9 or higher and/or are a newly diagnosed type 2 diabetic to be invited to participate in these classes. The participant should be available on the class day for several months at a time to ensure that the results obtained from the project are valid and generalizable.

Participant Enrollment

Enrollment of participants will be based on the eligibility criteria. The conference room where the intervention is being conducted allows up to 16 participants to safely conduct this project while also allowing social distancing. There will be 6 classes total, held twice a month over the course of 3 months.

Baseline health indicator data (HbA1c, weight, BP, BMI, cholesterol) will be collected from the participants from their medical record. These will be tracked during the course of the project as well as at the conclusion of the project.

Stakeholders/Barriers

The stakeholders of this project include the practitioners (nurse practitioners, physicians assistants and medical doctors) as well as the registered nurses at the FQHC in Anaheim and Santa Ana, California. These participatory educational classes for type two diabetics have been implemented at the FQHC in both locations for two years but there has not been any evaluation to determine if the patients are gaining knowledge or applying the lessons to their daily lives to change their behaviors and habits. Therefore, it's imperative that a systematic approach to evaluating these classes is completed to ensure that the patients are receiving the best quality information and activities to improve their physical and mental health in relationship to type 2

diabetes. Sine the COVID-19 pandemic, these classes have ceased to continue and now need to be restarted. In order for this to happen, the classes need to be proposed to the administration of the FQHC locations in order to gain buy-in to have the classes to restart. This obviously is a large barrier, for without the classes, an intervention and subsequent project is not feasible.

Description of Intervention

When a type 2 diabetic ambulatory patient from the FQHC is enrolled into the intervention, they will come to the location of the intervention at the fixed time that the intervention is being held. Each class will be 2 hours in length beginning with introductions, include an exercise and food demonstration, a didactic topic for discussion, a hands-on activity and possible homework or post-class quiz. This is a classroom set-up with a small food cart for food demonstrations.

As previously mentioned, the participatory classes are based in evidence as seen in the American Association of Diabetes Educators (AADE) Self-Care Behaviors. Specifically, the AADE identifies diabetes-specific medical nutrition therapy (MNT) as an essential component of an overall diabetes plan and therefore a nutritional component involving food or cooking is incorporated into each class during this project. Additionally, the AADE identifies being active should be included in all educational classes whether this exercise is structured or unstructured due to the benefits of regular activity on cardiometabolic health ("An Effective Model of Diabetes Care and Education: Revising the Aade7 Self-Care Behaviors®," 2020). For this reason, having an exercise activity during each class is attempted.

Below is the outline of the Diabetic Classes and their curriculum. This outline highlights all 6 of the classes that will be conducted. Each class has their own objectives, an activity for learning, a measurement to obtain learning and behavioral change, and a statistical method that is being used to analyze the data.

	Course Name	AADE7 Self-Care Behaviors	Topic	Objectives	Handouts	Visual Aids	Activities	Homework	Food Demo	Exercise	Measurement Tool	How to Determine if Pt Participated in Activity	Statistical Method used for Evaluation	Resources
Class 1	Diabetes 101	Reducing The Risks	What is Diabetes?	Participants	DM Welcome Packet (What is Diabetes Booklet, DM GMV Calendar, UCI FHC Resource Flyers, Class Rules). Self-Efficacy Handout. Self-Assessment of DM Care Questionairre. Pre-Course Quiz	Skeleton Man, Power Point, Pancreas Model, Cell Model	Pin the organs on Skelton Man. Look at random glucose readings and determine if they are normal, high OR low. Take everyone's POCT Blood Glucose in class	Create an I-SMART goal	Hummus with chopped veggies for dipping.	Walking Down Diabetes	Mark down those who participated in the activity. Grade the activity based on correct answers. Grade who returned to the next session with their I-SMART goal. Post-Class Quiz	Pins at least one organ on Skeleton Man. Completes blood sugar activity by circling answer to each question	in class activity: number who participated in activity over the total number of people. Activity: number of questions answered correctly over the total number of questions. Homework: number of people who returned their homework over the total number of people who were in class this week	"Life with Diabetes a Series of Teaching Outlines" Fifth Edition by the Michigan Diabetes Research and Training Center 2014 ADA. "Learning About Diabetes" https://www.learningaboutdiabetes.org/
Class 2	DM and Heart Health	Reducing the Risks and Being Active	How Diabetes affects the Cardiovascular System	Patients will learn the ABC's of diabetes and ways to control A1C levels, Blood Pressure, and Cholesterol.	AADE7 "Information on the Heart and Diabetes: Prevetnion"	PP Presentation	Balloon Demo. Take everyone's BP during the class. Set a specific goal related to either A1C, BP, or cholesterol to aim to improve by the end of the program	Patients will take a log of daily blood pressures and report back with the results for discussion.	Avocado Toast	Walking Down Diabetes	Mark down those who participated in the activities. Mark down who brings back their BP logs at the next session	Gets Blood Pressure test done during class.	activity: number of people who participated in the activity over the total number of people. Homework: total number of people who returned their homework over the total number of participants in the class this week	AADE7
Class 3	Nutrition	Healthy Eating and Problem Solving	Healthy Eating	Patients will learn basic nutrition guidelines, have knowledge of carb sources, lean about portion sizes, learn how to read food labels, symptoms and treatement of hypoglycemia, Optional: Shopping For Healthy Foods on a Budget.	Food Resources, AADE7 "Una Alimentacion Saludable"	PP Presentation	Store Tour OR In class Activity: Create Your Plate. Distribute a couple different food labels to patients and have a conversation about what stands out on these labels and why	Take a picture of at least 1 healthy meal you had at home and present it to the class at the next session	Salad with homemade dressing	Walking Down Diabetes	Mark participation in activities. Mark down who brings picture of healthy meal to next session. Post-class quiz	Patient will converse with at least one other person in focus group about topic and/or share their story to the class	Activity: number of people who participated in activity over the total number of people in the class. Homework: number of people who brought in homework over the total number of people who were in class. quiz: number of questions answered correctly over the total number of questions	Community Action Partnership of Orange County (714)899-3684, "Life with Diabetes a Series of Teaching Outlines" Fifth Edition by the Michigan Diabetes Research and Training Center 2014 ADA.
Class 4	Diabetes and the Eyes	Reducing The Risks	Special Guest: Opthalmologist	Patient's will learn how uncontrolled BS effects the eyes, treatments options, and ways to prevent complications.	Eye Care Tip Sheet	PP Presentation	In small groups, have patients share possible reasons why they wouldn't keep up to date with their regular eye checkups and how one can overcome these obstacles. Everyone gets a visual acuity test	N/A	Roasted Vegetable Enchilada Caserol	No exercise activity	Mark participation in activities	Patient receives a visual acuity test during class time.	participation: number of people who participated in the class over the total number of people in the class this week	Galvin Eye Institute Contact: Dana Collinson Email: dana.collinson@uci.edu Phone: (949)824-7243 https://www.nidcr.nih.gov/health-info/diabetes
Class 5	Dental Care	Reducing the Risks	Don't Forget the Dentist	Patient's will learn the importance of dental care and how to properly take care of their teeth	Dental Care Tip Sheet. Floss Handout to everyone	PP Presentation	Glove and Peanut Butter Demo	N/A	Soup	No exercise activity	Patient actively participates in the Demo		activity: number of people who participated in the activity over the total number of people in the class	
Class 6	Diabetes Foot Care	Reducing the Risks	Take Care Of Your Feet	Patients will learn the importance of foot care, learn how to inspect and care for their feet	DM Foot Care Tip Sheet. Self-Efficacy Questionaire. Self-Assessment of DM Care Questionairre.	PP Presentation	Monfilament Exam on each patient	Patients will go home and inspect the types of shoes they tend to wear and the pros and cons of those shoes in relation to foot health and diabetes	Baked Eggs	Calve and Foot stretching	Mark Participation of Monofilament exams. Mark completion of homework for each patient during next session	Patient receives a monofilament exam during class time	activity: number of people who participatd in the monofilament activity over the total number of people who are in the class. Homework: number of people who brought in the homework over the total number of people who were in the class this week	

	Course Name	AADE7 Self-Care Behaviors	Topic	Objectives	Handouts	Visual Aids
Class 1	Diabetes 101	Reducing The Risks, Taking Medication	What is Diabetes?	Participants will be able to 1)List S/S of Hyperglycemia & Hypoglycemia, 3) State normal range for Fasting and Postprandial BS,	DM Welcome Packet (What is Diabetes Booklet, DM GMV Calendar, UCI FHC Resource Flyers, Class Rules). Self-Efficacy Handout. Self-Assessment of DM Care Questionairre. Pre-Course Quiz	Skeleton Man, Power Point, Pancreas Model, Cell Model
Class 2	DM and Heart Health	Reducing the Risks and Being Active	How Diabetes affects the Cardiovascular System	Patients will learn the ABC's of diabetes and ways to control A1C levels, Blood Pressure, and Cholesterol.	AADE7 "Information on the Heart and Diabetes: Prevetnion"	PP Presentation
Class 3	Nutrition	Healthy Eating and Problem Solving	Healthy Eating	Patients will learn basic nutrition guidelines, have knowledge of carb sources, lean about portion sizes, learn how to read food labels, symptoms and	Food Resources, AADE7 "Una Alimentacion Saludable"	PP Presentation
Class 4	Diabetes and the Eyes	Reducing The Risks	Special Guest: Opthalmalogist	Patient's will learn how uncontrolled BS effects the eyes, treatments options, and ways to prevent complications.	Eye Care Tip Sheet	PP Presentation
Class 5	Dental Care	Reducing the Risks	Don't Forget the Dentist	Patient's will learn the importance of dental care and how to properly take care of their teeth	Dental Care Tip Sheet. Floss Handout to everyone	PP Presentation
Class 6	Diabetes Foot Care	Reducing the Risks	Take Care Of Your Feet	Patients will learn the importance of foot care, learn how to inspect and care for their feet	DM Foot Care Tip Sheet. Self-Efficacy Questionairre. Self-Assessment of DM Care Questionairre.	PP Presentation

Class	Topic	Focus	Subtopic	Objective	Materials	
Class 7	Diabetes and Kidneys	Reducing the Risks	Kidney Care	Patients will learn how the kidney works, learn about kidney disease and risk factors and how keep kidneys functioning their best.	Picture of Kidney hand out (one healthy kidney and another diseased)	PP Presentation
Class 8	Stress and Diabetes	Healthy Coping and Eating	Special Guest: Michelle, LCSW	Identify stressors and coping mechnisms	Recipe, AADE7 Handout on Stress	N/A
Class 9	Chef Wendy	Healthy Eating	Special Guest: Chef Wendy	Learn a new healthy recipe	Various Recipes	N/A
Class 10	Diabetic Myths	Being Active, Monitoring, Healthy Eating	Myths about Diabetes	To determine facts vs myths of various aspects of diabetes	Buzzer and Cards with Myths about Diabetes	N/A
Class 11	Preparing for the Holidays	Healthy Coping and Eating	Surviving the Holidays	Participants will learn ways to keep blood sugars under control while enjoying the Holidays	ADA Preparing For the Holidays Handout	PP Presentation
Class 12	End of the year Celebration/Graduation Week		Celebrating Milestones during this course	End of Year Review	Graduation Certificates. Self-Efficacy Questionairre. Self-Assessment of DM Care Questionairre.	

Distribute an interactive picture of a kidney and have patients identify the main parts of the kidney	Have patients observe their behaviors that may be detrimental to the health of their kidneys (and write down in journal) and	Yogurt Icecream	Exercise bands	Grade activity on the main parts of the kidney. Mark completion of homework when brought back to the	Patient will share with their focus group or the class a fact about the kidney or part of the kidney	activity: number of people who participated in the activity over the total number of people who are in the class.	National Kidney Foundation
Stress Sock (Rice/Lavender) and Meditation Exercise Video. Break out patients into small groups to have a more	Sharing a positive coping mechanism that was incorporated into their day to combat a stressor related to their	Shake-Shamrock Shake (almond milk, spinach, banana, and ice)	Meditation and Mindful Breathing	Mark participation of patients in small group discussions. Mark completion of homework at next session	Patient will share a story with their focus group	activity: number of people who participated in the activity over the total number of people who are in the class.	ADA: Stress-Free Diabetes Your Guide to Health and Happiness" and AADE7 "Stress A Little Something For
Distribute various different recipes to small groups and have them work together to determine which ones are healthy and which	Cook the new recipe that they learned and take a picture of it to present to next class	Zero Calorie Beverage	Gentle Chair Yoga	Mark participation of activity. Mark completion of homework at next session after viewing the picture of new	Patient actively participates in the activity and/or discusses answers with the class	activity: number of people who participated in the activity over the total number of people who are in the class.	
Game: Diabetes Feud. Participants will form two groups, each group will have one representative go up to answer a question,	N/A	Tofu Vegetable Stir Fry	Gentle Chair Yoga	Mark participation of the feud game	Patient actively participates in the activity and/or discusses answers with the class	activity: number of people who participated in the activity over the total number of people who are in the class	The Art and Science of Diabetes Self-Management Education Desk Reference 4th Edition. 2017. Diabetes Self-
In small groups, have patients share their personal struggles they run into during the holiday time and controlling their	N/A	Pumkin Tarts	Gentle Chair Yoga	Mark participation of the group discussion by completion of their indidivual list	Patient shares a struggle with their focus group and/or the class	activity: number of people who participated in the activity over the total number of people who are in the class	American Diabetes Assiciation https://www.diabetes.org/
Diabingo. Superlative awards and handing out certificates of completion to participants	N/A	Impossible Cookie	No exercise activity	Post Course Survey	Patient has marked at least 3 things on their Diabingo card showing that they have particicpated in the activity	activity: number of people who participated in the activity over the total number of people who are in the class.	

Activities	Homework	Food Demo	Exercise	Measurement Tool	How to Determine if Pt Particpated in Activity	Statistical Method used for Evaluation	Resources
Pin the organs on Skelton Man. Look at random glucose readings and determine if they are normal, high or low.	Create an I-SMART goal	Hummus with chopped veggies for dipping.	Walking Down Diabetes	Mark down those who participated in the activity. Grade the activity based on correct answers. Grade who returned	Pins at least one organ on Skeleton Man. Completes blood sugar activity by circling answer to each question	in class activity. number who participated in activity over the total number of people. Activity: number of questions	"Life with Diabetes a Series of Teaching Outlines" Fifth Edition by the Michigan Diabetes Research and
Balloon Demo. Take everyone's BP during the class. Set a specific goal related to either A1C, BP, or cholesterol to aim to	Patients will take a log of daily blood pressures and report back with the results for discussion.	Avocado Toast	Walking Down Diabetes	Mark down those who participated in the activities. Mark down who brings back their BP logs at the next session	Gets Blood Pressure test done during class.	activity: number of people who participated in the activity over the total number of people. Homework: total	AADE7
Store Tour OR In class Activity: Create Your Plate. Distribute a couple different food labels to patients and have a	Take a picture of at least 1 healthy meal you had at home and present it to the class at the next session	Salad with homemade dressing	Walking Down Diabetes	Mark participation in activities. Mark down who brings picture of healthy meal to next session. Post-class quiz	Patient will converse with at least one other person in focus group about topic and/or share their story to the class	Activity: number of people who participated in activity over the total number of people in the class. Homework: number	Community Action Partnership of Orange County (714)899-3684, "Life with Diabetes a Series of Teaching Outlines"
In small groups, have patients share possible reasons why they wouldn't keep up to date with their regular eye checkups and	N/A	Roasted Vegetable Enchilada Caserol	No exercise activity	Mark participation in activities	Patient receives a visual acuity test during class time.	participation: number of people who participated in the class over the total number of people in the class this week	Galvin Eye Institute Contact: Dana Collinson Email: dana.collinson@uci.edu Phone: (949)824-7243
Glove and Peanut Butter Demo	N/A	Soup	No exercise activity		Patient actively participates in the Demo	activity: number of people who participated in the activity over the total number of people in the class	https://www.nidcr.nih.gov/health-info/diabetes
Monfilament Exam on each patient	Patients will go home and inspect the types of shoes they tend to wear and the pros and cons of those shoes in relation to foot health	Baked Eggs	Calve and Foot stretching	Mark Participation of Monofilament exams. Mark completion of homework for each patient during next session	Patient receives a monofilament exam during class time	activity: number of people who participatd in the monofilament activity over the total number of people who are in	

Measures/Instruments/Tools

Summary of Diabetes Self-Management Questionnaire is a brief yet reliable and valid self-report measure of diabetes self-management that is useful both for research and practice (Toobert et al., 2000). This questionnaire will be given to each participant prior to the start of the intervention, half way through the intervention and after the cessation of the intervention. This is a self-reported document that is a suitable foundational element to look back on to determine how patients are improving throughout the intervention process as they learn more about their disease and become more motivated to make behavioral changes.

In addition to this self-report measure, a short 15 question quiz will be given out to each participant on the first and last day of the intervention. This quiz will incorporate all the material that will be learned throughout the intervention. We anticipate is that the participants will score significantly better at the end of the intervention, suggesting that they have not only learned new information from the classes, but retained it.

For the outcome of self-efficacy, the Stanford Patient Education Research Center's Diabetes Self-Efficacy Scale will be given to each participant prior to the start of the intervention, half way through the intervention and after the cessation of the intervention. This questionnaire is available in both English and Spanish, are highly reliable and valid (Ritter et al., 2016). In-class facilitators will be available to assist participants who cannot read.

For the outcome of how many people attend, an attendance sheet will be used. To measure the participation of the patient during class's activities, there will be a gradebook that the observer will use to annotate who is actually participating in the activities.

Data on specific health indicators including blood pressure, HbA1C, BMI, cholesterol and weight, will also be obtained. These specific indicators were included in this project because both the CDC and American Diabetes Association (ADA) target these biomarkers for improvement in the type 2 diabetic to decrease their risk for health complications (Center for disease control and prevention, 2019; Meigs, 2009). The medical record of the participant will be reviewed at specific intervals: prior to the start of the intervention, a month and a half into the intervention and at the conclusion of the project. The patient will sign a release form in order for this to be done on the first day of the class.

Data Collection Procedures

Data for the project will be collected from November 2021 to May of 2022. For demographic and baseline information, health indicators in the form of HbA1c, BMI, BP, cholesterol and weight will be collected from the electronic charts of each patient who is participating in the project. These health indicators will be collected prior to the start of the project, after the 3rd class session and after the 6th class session. There will also be two quizzes (as discussed in the previous section) to determine a foundational measurement of each participant in relation to their self-efficacy and self-assessment of diabetic care. These questionnaires will be completed via paper and collected prior to the start of the intervention, after class session 3 and after class session 6. Every class session will have an activity and the participation in that activity will be graded as well as the attendance of the participant to each class. Additionally, there will be a quiz given after class sessions 1 and 3 that will be graded based on completion and also correctness. A visualization of when certain measurements will be obtained during the course of the project is as follows:

DATA COLLECTION DURING INTERVENTION

	PRE	1	2	3	4	5	6
Health Indicators eg. HbA1c, BMI, BP, cholesterol, weight	X			X			X
Self-Efficacy	X			X			X
Attendance		X	X	X	X	X	X
Engagement in in-class activity		X	X	X	X	X	X
Self-Assessment of DM Care	X			X			X
Post-Class Quiz		X		X			
Mark Completion of Homework		X	X	X			X

Data Analysis

For continuous data, descriptive statistics will be used including rates, averages and standard deviations. Most of the data collected will be categorical. For example, it will be noted if the patient participated in the in-class activity or not, if the patient attended the class or not, if the patient returned their homework from the previous week or not and if they completed the Stanford Self-Efficacy and Diabetes Self Care Activities Measure Questionnaires or not.

Other data will be numerical. This includes grades on quizzes both pre-intervention and post-intervention, pre-class and post-class for sessions 1 and 3 and the grades on both the Stanford Self-efficacy and Diabetes Self Care Activities Measure Questionnaires pre and post intervention and after class session 3. These scores will be compared using Chai Square Test or T-tests.

Baseline data on sex, age, ethnicity, BMI, cholesterol, BP, weight, HbA1C will be included to compare certain groups and assess any patterns that may be found. At the end of the project, rates and averages will be calculated to investigate any possible patterns.

For the outcome of self-efficacy, T-tests will be used from the answers of the Stanford Self-efficacy Questionnaire. For the outcome of how many people attend and how many people participate in the in-class activity, we are going to take the amount of people who attended the class or participated in the activity and divide by the total number of participants in the class. All quiz grades (pre and post intervention, pre and post Stanford Self-Efficacy Questionnaire and Diabetes Self Care Activities Measure Questionnaire and the quizzes during class sessions 1 and 3) will be analyzed using Chai Square Tests or T-tests.

Ethics and Human Subjections Protection

This project was taken through the UCI IRB's as appropriate to obtain approval through the non-human subjects' research determination criteria. All participants will be protected by the Health Insurance Portability and Accountability Act (HIPAA) of 1996 which, among other guarantees, protects the privacy of patients' health information (Modifications to the HIPAA Privacy, Security, Enforcement and Branch Notification Rules, 2013). All information collected as part of evaluating the impact of this project will be aggregated data from the project participants and will not include any potential patient identifiers. The risk to participants participating in this project will be explained. All electronic files containing identifiable information will be password protected to prevent access by unauthorized users and only the DNP student will have access to the password.

Sustainability Plan

Due to the easy and efficient way to evaluate the participatory classes for type 2 diabetics at the FQHC, this way of evaluation is highly sustainable. These participatory diabetic classes have already been implemented prior to this study at the FQHC in Anaheim and Santa Ana, California. With that said, these classes have already been sustained for years now. With the systematic process explained in this paper, most anyone can assume the role of "evaluator" to collect the appropriate data for analyzing in order to ensure the effectiveness of these classes. The analyzing of the data is also quite simple and can therefore ease the process of sustainability and dissemination of this project for years to come.

Dissemination Plan

The data that is collected and analyzed from this project will be disseminated to the stakeholders at the conclusion of the intervention in May 2022. It is imperative that the data be shared with these members in order to draw conclusions on what is effective regarding these

participatory classes. This data can improve these classes in order to help underserved type two diabetics in this area gain tighter control of their disease and decrease their risk of long-term complications. Making changes and improvements to these classes through dissemination will help the patients of this population in the long term and therefore dissemination of the results is crucial.

CHAPTER V: FINDINGS

The following sections describe the changes made to the project based on covid-related events and go into detail about the methods and results of the intervention. It will also use the model for the original intervention and compare them to the new intervention while analyzing the similarities and differences and refining the Logic Model based on those results.

SECTION 1: Description of Changes to the Project Based on Covid-Related Events

Due to COVID-19, the original project plan was unable to be implemented. The diabetic participatory classes were cancelled until further notice because of the pandemic. In order to complete this DNP project, a pivot was made. Instead, I was able to come on board a different participatory education initiative that evaluated patients with hypertension and the purposes were tailored based on this new intervention. These hypertension participatory classes are under the project name "Mi Propio Camino" and are grant-funded, therefore they were still being implemented during the pandemic. This change was approved by the UCI DNP committee.

Therefore, it was necessary to change the hypothesis of this project. While the purpose was still to develop and evaluate a participatory educational intervention, the specific goals changed based on the need to change the intervention evaluated. Furthermore, since the hypertension participatory intervention was already designed and mostly implemented, pre-existing data was all that could be used in the evaluation. Hence, the focus of the objective was

less concentrated on the evaluation that I was able to accomplish as part of this project and pivoted instead towards evaluating the Logic model in general that was developed and discussed in Chapter II of this paper to identify applicability of this model for this new intervention.

In light of this, the new purpose of my project is to (a) describe the methods and results of the new intervention, (b) map the methods of the new intervention to the model developed for the original project, (c) analyze the similarities and differences between interventions and how these may have influenced the results of the new project, and (d) refine the model based on analysis.

Methods and Results of Hypertension Participatory Classes

The following sections describe the intervention, its purpose, its methods and the findings that were generated.

Description of Hypertension Participatory Classes

This project was a randomized controlled trial that included an experimental and control group where each group had participants that attended 4 weekly 2-hour classes that were participatory in nature and educated the participants on hypertension and its implications. The classes took place in a classroom on a hospital campus and the patients were recruited from their primary care providers at a FQHC. The patients had to have a history of hypertension and be on at least one anti-hypertensive medication. In class, each week discussed a new topic and the experimental group received more hands-on skill building, focus group discussions and role playing to solidify learning versus the control group who received their learning from didactic means only (eg. PowerPoint presentations). Data was collected on the participants in the experimental group regarding their behaviors, knowledge, and attitudes towards blood pressure

through validated and reliable surveys as well as blood pressure readings. This data was taken at the first class and either at the last class or at 1-month follow up.

The goals of the "Mi Propio Camino" project are for participants to learn the facts about blood pressure, understand what blood pressure readings mean and understand the benefits of taking medications through reduced risk for complications and strategies to remember to take medications to underserved patients with hypertension.

Project Description

The "Mi Propio Camino" project is a randomized control trial project that is grant-funded. The participants are separated into two groups-a control group and experimental group. Although the content of the teaching is the same for both groups, the experimental group received more hands-on participatory education via skill building and focus group discussions than the control group did. The experimental group also had a medical doctor present for each class to answer any questions and focused on personalizing approaches to improving their blood pressures. The control group focused more on healthy lifestyle strategies as outlined by the American Heart Association. Each group met simultaneously once a week for four weeks for a 2-hour participatory class on hypertension management. After each class, a phone call was made by the facilitators to each participant to go over how they are achieving their goals they set for themselves as well as re-enforce the previous week's lesson and answer any questions. Survey items were given at both week 1 and week 4 as well as 1-month post-intervention to evaluate the participant's knowledge, attitudes and behaviors towards hypertension, taking their medications, barriers to taking their medications and comparing their blood pressure pre and post intervention. There is a $20 gift card incentive at two points in the project-after the second class and after the

1-month follow up to minimize loss to follow up and encourage participants to return to their classes.

Project Timeline

The first week of the "Mi Propio Camino" project consisted of going over the basics of blood pressure-discussing what the readings mean and underlying factors of hypertension. Then, the participants did an activity where they listed all of their medications that they take, the barriers to taking their medications and when they are due for refills. Next, they participated in a focus group discussion to set individualized and measurable goals for the entire 4-week program as well as for the next week. They scheduled follow up phone calls with the facilitators in order evaluate how they are achieving their goals and remind them of that previous week's lesson. At this lesson, the participants in the experimental group were given a blood pressure monitor and cuff, tracking sheet, and a cap monitor for their pill bottles that records the number of times their anti-hypertensive medications are taken daily. The blood pressure monitor and cuff were gifted to each participant at the end of the program as a contribution to finishing the classes.

The second week of the project included a discussion about how their blood pressure monitoring and tracking has been over the past week with their focus groups. Participants were encouraged to share their stories with the entire class after the conclusion of the individual focus group discussions. Then, they learned about making healthy meal choices including the DASH diet and Mediterranean diet. This class included a small cooking demonstration on how to prepare quick and healthy appetizers. The class went on to educate the participants on the importance of physical exercise and also conducted a participatory aerobic resistance and strength training exercise. Again, follow up phone calls were scheduled with the facilitators in order evaluate the progress of individual goals and remind them of that previous week's lesson.

The third week of the project focused on mind-body relaxation and healthy sleep. This topic discussed the relationship between stress and hypertension and the benefits of relaxation approaches. It also covered common supplements and their benefits of lowering blood pressure measurements. A relaxation and meditation skill building were conducted during this lesson. Follow up phone calls were scheduled with the facilitators for mid-week progress updates and reminders.

The fourth and last week of the project wrapped up the previous visits lessons and allowed the participants to individualize their approaches to improve their blood pressures. Focus group discussions included sharing how their goal setting went, patterns that were noticed and identifying barriers to achieving their goals. Then, a lesson was given on medication misconceptions, fears and beliefs to focus on the importance of medication compliance. There was also a role-playing activity that went over how to facilitate communication with their provider regarding taking this class, their hypertension, their medication and compliance, any fears or barriers to healthy living they may have and their future health goals. After this class, the same surveys given to the patients after the first class were passed around and completed as well as blood pressure was re-checked to compare to pre-intervention blood pressure. The class ended with scheduling a follow up visit in one month to re-check their blood pressure one last time.

Project setting/population

"Mi Propio Camino" was conducted at a classroom at the University of California, Irvine Medical Center (UCIMC) campus. Patients from FQHCs in the area who are diagnosed with hypertension and taking at least one anti-hypertensive medication were invited to participate in this intervention by their primary care providers.

As previously discussed, patients with hypertension that received their primary care at an FQHC were invited to participate in this intervention. These patients need to have at least one anti-hypertensive medication prescribed to them that they are currently taking to be included in this study. Patients were then separated into two cohorts-experimental and control group-via randomization. These groups met simultaneously once a week for 4 weeks for 2-hour sessions on how to better control their hypertension.

The Intervention

The "Mi Propio Camino" program consisted of one 2-hour class once a week for 4 weeks followed by a 1-month follow up. There were two groups that underwent this intervention- a control and experimental group. Each participant, regardless of the group they were in, received a $20 gift card after attending the second class and after their 1-month follow up. Each class was conducted similarly regardless of cohort in regards to the class outline and educational content; however, the experimental group had a focus on individualized goals and skill building. The experimental group also had access to a medical doctor during their classes for questions, received a blood pressure cuff and monitor and a cap monitor for their anti-hypertensive pill bottles. Each class started with introductions and reviewing the previous week's lesson and answering any questions. Every class also included focus group discussions and/or sharing personal stories to the class. The experimental group engaged in role play activities, skill building with various items and scenarios and cooking and exercising activities.

Surveys were used during the first class to collect data on the participants' attitudes, knowledge and behaviors. To measure knowledge, a questionnaire was distributed to each participant to be completed during the first and final class to measure their confidence in managing medication for hypertension. To measure the patient's attitudes, a Beliefs in

Medication Questionnaire (BMQ) was completed by participants during the first and final class. This was used to measure the patient's beliefs regarding anti-hypertensive medications to see if they thought they were necessary, concerning, overused, harmful or had no medication beliefs whatsoever. To measure the patient's behaviors, the Arizona Lifestyle Index (ALI) survey was used. This survey is a validated and reliable tool to collect data on patient's daily behaviors in relationship to healthy eating, physical exercise, sleep, stress, medication and reminders, and possible reasons for nonadherence to medications. ALI was distributed and completed by the participants during the first class, after the last class and at the 1-month follow up.

There was also a sheet that was used to collect demographic information from each participant. Systolic and diastolic blood pressure were also taken during the first class and at the 1-month follow up and compared and evaluated during the data analysis process.

Data dictionary and instrument collection details can be found below.

Domain	Variable	BL or S1	S4	1M	Min Possible	Max Possible	Definition	Values
Demographic	demoAge	X			18	--		
Demographic	demoFemale	X			0	1	Gender	0 = Male, 1=Female
Demographic	demoEduGTHS	X			0	1	Education	0 = Less than HS, 1=HS or beyond
Demographic	demoHispanic	X			0	1	Ethnicity	0 = Non-Hispanic, 1=Hispanic
Demographic	demoUSBorn	X			0	1	Nativity (Country of Birth)	0 = Born outside of US, 1=Born in US
Demographic	demoIncome3grp	X			1	3	Household income	1=Below $20,000/year; 2= $20,000 or more per year; 3=Not reported
Knowledge	SelfEffScore	X	X		8	40	Confidence in managing medications for hypertension	Higher = more confident
Attitudes	BMQsn	X	X		5	25	BMQ - Beliefs that my BP medications are NECESSARY	Higher = more positive belief
Attitudes	BMQsc	X	X		5	25	BMQ - Beliefs that my BP medications are CONCERNING	Higher = more NEGATIVE belief
Attitudes	BMQgo	X	X		4	20	BMQ - Beliefs that medications in general are OVERUSED	Higher = more NEGATIVE belief
Attitudes	BMQgh	X	X		4	20	BMQ - Beliefs that medications in general are HARMFUL	Higher = more NEGATIVE belief
Attitudes	BMQnc	X	X		-20	20	BMQ - Net medication beliefs (Necessity - Concern Score)	Higher = more positive net beliefs

Behaviors	lifestyle	X	X	X	0	7	Arizona Lifestyle Index (ALI)	Higher = more days of healthy behaviors in past week	Arizona Lifestyle Index		
Behaviors	daysS5fruitVeg	X	X	X	0	7	ALI - # days in past week ate 5+ servings of fruits/veggies	Higher = more days of healthy behaviors in past week	Arizona Lifestyle Index		
Behaviors	daysBreakfast	X	X	X	0	7	ALI - # days in past week ate breakfast	Higher = more days of healthy behaviors in past week	Arizona Lifestyle Index		
Behaviors	days30minModExercise	X	X	X	0	7	ALI - # days in past week did 30 min of moderate exercise	Higher = more days of healthy behaviors in past week	Arizona Lifestyle Index		
Behaviors	daysRelax	X	X	X	0	7	ALI - # days in past week engaged in activity to relax, manage stress	Higher = more days of healthy behaviors in past week	Arizona Lifestyle Index		
Behaviors	daysBreathing	X	X	X	0	7	ALI - # days in past week did a breathing exercise for stress reduction	Higher = more days of healthy behaviors in past week	Arizona Lifestyle Index		
Behaviors	days7to8hoursSleep	X	X	X	0	7	ALI - # days in past week got between 7-9 hours of sleep	Higher = more days of healthy behaviors in past week	Arizona Lifestyle Index		
Behaviors	daysWokeRested	X	X	X	0	7	ALI - # days in past week felt rested after waking from sleep	Higher = more days of healthy behaviors in past week	Arizona Lifestyle Index		
Behaviors	daysTimeWithLovedOnes	X	X	X	0	7	ALI - # days in past week spent time nurturing relationships with family/frien	Higher = more days of healthy behaviors in past week	Arizona Lifestyle Index		
Behaviors	BehStratIndex	X		X	0	14	Medication Adherence Strategies Inventory (ASI)	Higher = more use of strategies to remember meds	Medication Adherence Strategies Inventory (ASI)		
Behaviors	BehStrat1	X		X	1	3	Do you set an alarm to remind yourself?	1=No, 2=Yes, sometimes, 3=Yes, almost always	Medication Adherence Strategies Inventory (ASI)		
Behaviors	BehStrat2	X		X	1	3	Do you write yourself a note?	1=No, 2=Yes, sometimes, 3=Yes, almost always	Medication Adherence Strategies Inventory (ASI)		
Behaviors	BehStrat3	X		X	1	3	Does someone else remind you to take your medication?	1=No, 2=Yes, sometimes, 3=Yes, almost always	Medication Adherence Strategies Inventory (ASI)		

Behaviors	BehStrat4	X		X	1	3	Do you keep your medications in a consistent location to help you remember	1=No, 2=Yes, sometimes, 3=Yes, almost always	Medication Adherence Strategies Inventory (ASI)		
Behaviors	BehStrat5	X		X	1	3	Do you use a pill box or daily pill organizer?	1=No, 2=Yes, sometimes, 3=Yes, almost always	Medication Adherence Strategies Inventory (ASI)		
Behaviors	BehStrat6	X		X	1	3	Do you have an app on your phone to remind you?	1=No, 2=Yes, sometimes, 3=Yes, almost always	Medication Adherence Strategies Inventory (ASI)		
Behaviors	BehStrat7	X		X	1	3	Other	1=No, 2=Yes, sometimes, 3=Yes, almost always	Medication Adherence Strategies Inventory (ASI)		
Behaviors	SafranCRN3	X	X	X	0	1	Reported Medication Nonadherence due to Cost	1 = Patient skipped meds due to cost in past month; 0 = they didn't skip for that reason	Safran Reasons for Nonadherence Scale		
Behaviors	SafranBeliefs6	X	X	X	0	1	Reported Medication Nonadherence due to Beliefs/Concerns	1 = Patient skipped medications because of concerns about harms or benefits in past month; 0 = they didn't skip for that reason	Safran Reasons for Nonadherence Scale		
Behaviors	SafranNonadh_Unintentional2	X	X	X	0	1	Reported Unintentional Medication Nonadherence (forgetting, access)	1 = Patient skipped meds accidentally in past month; 0 = they didn't skip for that reason	Safran Reasons for Nonadherence Scale		
Behaviors	SafranNonadh11	X	X	X	0	1	Reported Medication Nonadherence for ANY reason	1 = Patient skipped meds for any reason n past month; 0 = they didn't skip meds at all	Safran Reasons for Nonadherence Scale		
Outcome	SBPofficial	X		X	--	--	Systolic blood pressure	mmHg, taken by study team member with automated cuff; repeated if value above safety threshold	--		
Outcome	DBPofficial	X		X	--	--	Diastolic blood pressure	mmHg, taken by study team member with automated cuff; repeated if value above safety threshold	--		

Data Collection Procedures

Data collection forms for both the experimental and control groups for each session can be found below. These forms were distributed during the first class and at the one month follow up to obtain information on the participant's knowledge, attitudes and behaviors on hypertension.

Participants will also be surveyed at class one and on month follow up regarding their attempt at adhering to their anti-hypertensive medication through various strategies.

HCP Session 1 Data Collection Form (Control Group)

Participant ID: 1._____   MPC Cohort #: 2._____   Today's Date: 3._____

Pre-Visit

☐4. Session 1 Pre-Questionnaire completed   (check if done), by (initials) 5._____

BP Measurements

Time measured	SBP	DBP	HR	Measured by (initials)
6a.	6b.	6c.	6d.	6e.
7a.	7b.	7c.	7d.	7e..
8a.	8b.	8c.	8d.	8e.

Post Visit

Checklist	Verified by (init)
☐13a Completed all fill-in handouts correctly	13b.
☐14a Set at least one medication goal	14b.
☐15a Medication Goal Sheet added to SharePoint	15b.
☐15a Completed medication activity (filling in medication names, dosage, etc.)	
☐18a Follow-up call scheduled (with: 18c._____ day:18d _____ time: 18e._____) Preferred phone #: 18f._____ 18g. Texting ok: Yes No	18b.

Attendance - present on-time for:

☐19a Check-in	☐19b Intro	☐19c Tema 1	☐19d Tema 2	☐19e Tema 3	☐19f Closing

Accompanied by: 20a._____ (how many) people, relationship 20b._____

Please use the back to take additional notes, as needed
HCP Session 2 Data Collection Form

Participant ID: 1._____   MPC Cohort #: 2._____   Today's Date: 3._____

Checklist	Verified by (init)
4a Tried the food demo (mango salsa, sweet potato salad, and chips)	4b.
5a.	5b.
6a.	6b.

Post Visit

Checklist	Verified by (init)
13a Completed all fill-in handouts correctly	13b.
14a. Set at least one SMART goal	14b.
15a SMART Goal Sheet photographed and uploaded	15b.
16a Session 2 compensation given ($20)	16b.
18a Follow-up call scheduled (with: 18c._____ day:18d _____ time: 18e._____) Preferred phone #: 18f._____ 18g. Texting ok: Yes No	18b.

Attendance - present on-time for:

19a Check-in	19b Intro	19c Tema 1	19d Tema 2	19e Tema 3	19f Closing

Accompanied by: 20a._____ (how many) people, relationship 20b._____

Please use the back to take additional notes, as needed

HCP Session 3 Data Collection Form

Participant ID: 1._____   MPC Cohort #: 2._____   Today's Date: 3._____

Pre-Visit

Checklist	Verified by (init)

Post Visit

Checklist	Verified by (init)
13a. Completed all fill-in handouts correctly	13b.
14a. Set at least one SMART goal	14b.
15a. SMART Goal Sheet photographed and uploaded	15b.
16a.	16b.
18a. Follow-up call scheduled (with: 18c._____ day:18d _____ time: 18e._____) Preferred phone #: 18f._____ 18g. Texting ok: Yes No	18b.

Attendance - present on-time for:

19a. Check-in	19b. Intro	19c. Tema 1	19d. Tema 2	19e. Tema 3	19f. Closing

Accompanied by: 20a._____ (how many) people, relationship 20b._____

Please use the back to take additional notes, as needed

HCP Session 4 Data Collection Form

Participant ID: 1._____   MPC Cohort #: 2._____   Today's Date: 3._____

Pre-Visit

☐ 4. Session 4 Questionnaire completed (check if done), by (initials) 5._____

BP Measurements

Time measured	SBP	DBP	HR	Measured by (initials)
6a.	6b.	6c.	6d.	6e.
7a.	7b.	7c.	7d.	7e..
8a.	8b.	8c.	8d.	8e.

Medication and MEMS set up

Med #	Med Name/Dose	# pills	Freq	Pill Count	Notes
Med 1	9a.	9b.	9c.	9d.	9e.
Med 2	10a.	10b.	10c.	10d.	10e.

Med 3	11a.	11b.	11c.	11d.	11e.
Med 4	12a.	12b.	12c.	12d.	12e.

Post Visit

☐4. Session 4 Questionnaire completed (check if done), by (initials) 5._____

Checklist	Verified by (init)
☐13a Completed all fill-in handouts correctly	13b.
☐14a Set at least one SMART goal	14b.
☐15a SMART Goal Sheet photographed and uploaded	15b.
☐16a Session 4 compensation given ($20)	16b.
☐18a 1 month Follow-up call scheduled (18c._____ date:18d _____ time) Preferred phone #: 18f._____ 18g. Texting ok: Yes No	18b.

Attendance - present on-time for:

☐19a Check-in	☐19b Intro	☐19c Tema 1	☐19d Tema 2	☐19e Tema 3	☐19f Closing

Accompanied by: 20a._____ (how many) people, relationship 20b._____

Please use the back to take additional notes, as needed

MPC Session 1 Data Collection Form (Experimental Group)

Participant ID: 1._____   MPC Cohort #: 2._____   Today's Date: 3._____

Pre-Visit

☐4a. yes / no Session 1 Pre-Questionnaire completed (check if done), by (initials) 4b._____
☐5a. yes / no Patient brought in at least one BP medication, verified by (initials) 5b._____
        (If no, what is the reason: 5c. _____)

BP Measurements

Time measured	SBP	DBP	HR	Measured by (initials)
6a.	6b.	6c.	6d.	6e.
7a.	7b.	7c.	7d.	7e..
8a.	8b.	8c.	8d.	8e.

Medication and MEMS set up (if patient did not bring at least one BP med, check here

Med #	Med Name/Dose	# pills	Freq	Pill Count	Notes

Med 1	9a.	9b.	9c.	9d.	9e.
Med 2	10a.	10b.	10c.	10d.	10e.
Med 3	11a.	11b.	11c.	11d.	11e.
Med 4	12a.	12b.	12c.	12d.	12e.

Post Visit

Checklist	Verified by (init)
13a. Completed all fill-in handouts correctly	13b.
14a. Demonstrated appropriate BP measurement method	14b.
15a. Transferred meds to med bottle and demonstrated use of MEMS cap	15b.
16a. Demonstrated use of diary	16b.
17a. Reflection time scheduled (enter time here: 17c._____)	17b.
18a. Follow-up call scheduled (with: 18c._____ day:18d _____ time: 18e._____) Preferred phone #: 18f._____ 18g. Texting ok: <u>Yes No</u>	18b.

Attendance - present on-time for:

19a. Check-in	19b. Intro	19c. Tema 1	19d. Tema 2	19e. Tema 3	19f. Closing

Accompanied by: 20a._____ (how many) people, relationship 20b._____
Please use the back to take additional notes, as needed

MPC Session 2 Data Collection Form

Participant ID: 1._____   MPC Cohort #: 2._____   Today's Date: 3._____

Pre-Visit

Checklist	Verified by (init)
4a. Brought diary	4b.
5a. Diary was completed for 5c._____ (#) entries since last class	5b.
6a. MEMS Adherence %:_____	6b.

Post Visit

Checklist	Verified by (init)
13a. Completed all fill-in handouts correctly	13b.
14a. Goal setting completed	14b.
15a. Goal sheet photographed and uploaded	15b.
16a. Session 2 compensation given ($20)	16b.
17a. Habit tracker photographed and uploaded	17b.
18a. Reflection time scheduled (enter time here if different: 17c._____)	18b.
19a. Follow-up call scheduled (with: 18c._____ day:18d _____ time: 18e._____) Preferred phone #: 18f._____ 18g. Texting ok: Yes No	19b.

Attendance - present on-time for:

19a. Check-in	19b. Intro	19c. Tema 1	19d. Tema 2	19e. Tema 3	19f. Closing

Accompanied by: 20a._____ (how many) people, relationship 20b._____

Please use the back to take additional notes, as needed

MPC Session 3 Data Collection Form

Participant ID: 1._____   MPC Cohort #: 2._____   Today's Date: 3._____

Pre-Visit

Checklist	Verified by (init)
4a. Brought diary	4b.
5a. Diary was completed for 5c._____ (#) entries since last class	5b.
6a. MEMS Adherence %:_____	6b.

Post Visit

Checklist	Verified by (init)
13a. Completed all fill-in handouts correctly	13b.

14a. Goal setting completed	14b.
15a. Goal sheet photographed and uploaded	15b.
16a. "Mapa de salud" photographed and uploaded	16b.
17a. Reflection time scheduled (enter time here if different: 17c._____)	17b.
18a. Follow-up call scheduled (with: 18c._____ day:18d _____ time: 18e._____) Preferred phone #: 18f._____ 18g. Texting ok: Yes No	18b.

Attendance - present on-time for:

19a. Check-in	19b. Intro	19c. Tema 1	19d. Tema 2	19e. Tema 3	19f. Closing

Accompanied by: 20a._____ (how many) people, relationship 20b._____

Please use the back to take additional notes, as needed

MPC Session 4 Data Collection Form

Participant ID: 1._____   MPC Cohort #: 2._____   Today's Date: 3._____

Pre-Visit

4a. yes / no Session 4 Questionnaire completed (check if done), by (initials) 4b._____

Checklist	Verified by (init)
4a. Brought diary	4b.
5a. Diary was completed for 5c._____ (#) entries since last class	5b.
6a. Brought BP monitor	6b.

BP Measurements

Time measured	SBP	DBP	HR	Measured by (initials)
6a.	6b.	6c.	6d.	6e.
7a.	7b.	7c.	7d.	7e..
8a.	8b.	8c.	8d.	8e.

MEMS (if patient did not bring at least one BP med, check here ☐)

Med #	Med Name/Dose	Pill Count	MEMS Adherence %
Med 1	9a.	9d.	9e.
Med 2	10a.	10d.	10e.

Med 3	11a.	11d.	11e.
Med 4	12a.	12d.	12e.

Post Visit

4a. yes / no Session 4 Questionnaire completed (check if done), by (initials) 4b._____

Checklist	Verified by (init)
13a. Completed all fill-in handouts correctly	13b.
16a. Session 4 compensation given ($20)	16b.
17a. "Mapa de salud" photographed and uploaded	17b.
19a. **1 month Follow-up** call scheduled (19c._____ date:19d _____ time) Preferred phone #: 19f._____ 19g. Texting ok: Yes No	19b.

Attendance - present on-time for:

20a. Check-in	20b. Intro	20c. Tema 1	20d. Tema 2	20e. Tema 3	20f. Closing

Accompanied by: 21a._____ (how many) people, relationship 21b._____

Please use the back to take additional notes, as needed

Data Analysis

Data was analyzed using both demographic information and surveys. First, demographic information was collected and evaluated at the start of the first class for the experimental group. This helped us understand the type of participant that was drawn to the hypertension classes and allowed us to make certain inferences from this information. To recognize what aspects of the participatory intervention were successful, surveys were distributed to the participants at class one and class four to evaluate changes in the participant's knowledge, attitudes and behaviors. This data was evaluated at the one month follow up to understand if these changes were sustained after the conclusion of the intervention. Participants were also surveyed at class one and at the one month follow up regarding their attempt at adhering to their anti-hypertensive medication through various strategies. And finally, blood pressure readings were taken at class

one and at one-month follow up to objectively observe if a change was made in the participants'

blood pressure readings after the conclusion of the intervention.

There were 60 participants who completed classes 1 through 4 in the experimental group.

47 out of 60 participants in the experimental group followed up 1-month after the intervention to

complete the ALI survey and repeat their blood pressure. Overall, attitudes and behaviors in

relationship to hypertension and managing it improved while knowledge and confidence in

managing blood pressure medications decreased. Refer to Chapter VI for more details about the

results.

Mapping Process

This section will map the methods of the new intervention to the model developed for the

original participatory educational intervention for underserved type 2 diabetics. The purpose of

this mapping process is to determine if the Logic Model that was constructed originally was

comprehensive and applicable to the new, hypertension intervention or if there were significant

differences.

Comparing Participatory Approaches in Each Class

When comparing the participatory education methods for each class, one needs to look

back at the literature on what should be included at the most basic level of a participatory class.

This section will go over what the literature states is necessary to include in the curriculum of

any participatory education in order to yield the most comprehension and knowledge from the

participants. Education that is considered participatory in nature needs to include certain

characteristics. Having these certain characteristics ensures understanding from most, if not all,

participants regardless of educational or socioeconomic background because it takes the focus

off of literacy and previous education and puts it on activities, personal stories and feedback and skill building.

Educational Basic Requirements

The content of the participatory classes should, at its basic level, include an educator, participants, physical space for the class and writing materials to take notes. According to Elasy et al., (2001), the background of the educator can vary so long as they are "empowering the patients". The physical space should ideally be a small room to minimize distractions and create a greater sense of community. It is also widely encouraged by multiple sources (Elasy et al., 2001; CDC, 2019; Pinchera et al., 2019; Seley & Weinger, 2007) that participants should invite their family and friends to these participatory classes in order to create social support.

Teaching Methods

The methods of teaching the lessons in a participatory educational class are vital. The methodology of the education must be organized, concise and allow those with low literacy levels to comprehend and understand the content in order to learn from it and ultimately change their behaviors.

When beginning to teach a participatory educational class, the literature suggests to start with defining outcomes and objectives at the beginning of each class (Seley & Weinger, 2007). This will allow an outline for the class as well as give the participants an idea of what the content will be on. When going over main points of the topic, it's important to site where the information is coming from (Characteristics, 2019). This shows that the concepts being talked about are not new and the content is research based and theory driven. Often times this resonates with the participants in that they give the content more weight knowing that it came from a reputable source (Characteristics, 2019).

According to the literature, the participatory educational classes should be brought to the attention of each participant's medical provider (Elasy et al., 2001). Having the participant's provider recognize that the patient is participating in an outside intervention to improve their health shows the provider that the participant has an earnestness and determination to change their health and it also closes the loop when the patient reports back to their provider. If a patient learned a new skill from a participatory educational class and applied it to their lives, ultimately improving their health, they would report back to their medial provider stating so or showing this improvement through health indicators (eg. blood pressure improvement, decrease in cholesterol, decrease in hemoglobin A1C, etc). Having the medical provider included in knowing that their patient is participating in these classes shows teamwork and collaborative decision making between the patient and provider that can ultimately encourage the patient to continue these positive behavioral health changes for years to come.

Another teaching method that is vital for a successful participatory educational class includes having a standardized collection sheet. Having a standardized collection sheet leaves little room for bias and creates a clearer picture when comparing data at the end of the intervention. Participatory educational classes should also include practicing at least one skill during the class to fully understand the skill and allow facilitators to correct the patient if needed (Reed et al., 2014). This ensures that the patient clearly comprehends the concept that is being taught in order for them to use this skill outside of the classroom setting. Another way to ensure comprehension is to quiz the participants. Although this may not be feasible depending on the literacy of the class members, it is widely found that quizzing participants of an educational class is the number one way to assess knowledge (Reed et al., 2014; CDC, 2019; Elasy et al., 2001; Pinchera et al, 2018).

Focus groups are important characteristics to have during participatory educational classes. It allows participants to provide feedback and allows the patient to relate to the content on an individual level while also creating support among other group members when their stories are shared. Participants should be able to provide feedback at least two times during each class (Reed et al., 2014). Focus groups also allow the patient to individualize the class content towards themselves through writing down specific personal goals, sharing a personal story, etc. According to Pinchera et al., (2018), a successful participatory educational class should allow at least one opportunity for each participant to share how the content being taught is individualized to themselves. It's important to note that the literature emphasizes an importance of having each focus group contain the same number of people. This allows for a more collaborative approach in discussing certain topics, so there's not an unbalanced number of people. Sometimes having a significant number of more people in one focus group may cause an overpowering of that group and cause focus groups with a smaller number of people to feel intimidated to speak up or share their stories (Elasy et al., 2001).

Clarity/Literacy

Communicating a broad range of health messages to a wide variety of audiences can be very challenging. Culture and literacy skills are two important factors to consider when designing health communication materials that will capture the audience's attention. According to the National Assessment of Adult Literacy (NAAL, 2003), 30 million adults struggle with basic reading tasks and only 12% of consumers have proficient health literacy skills. This suggests that 9 out of 10 adults may lack many of the skills necessary to sufficiency manage their health (NAAL, 2003). In order to ensure maximum learning and retention by participants, especially those in underserved populations with low health literacy levels, the CDC published a

guide that outlines how to create class content that is easy to understand. This can and should be used in participatory educational classes as well.

The guide provides ways to organize information and use language and visuals. It suggests that when conducting an educational class, all lists that are in the PowerPoint have a maximum of 7 items with bullet points and not commas, medical jargon is limited to 6 items per PowerPoint slide, the font size is between 12 and 14 points (this does not include headings). It also suggests to write content that highlights the positive versus the negative. For example, instead of saying "Don't eat fatty foods," say "It is better to eat fruits and vegetables with lean meats to maintain healthy sugar levels." There should be no slides in the PowerPoint that contain all capital letters. When showing sequence, images should have numbers next to them. Try to use as many one to two syllable words in order for lower literacy populations to understand. And lastly, make sure that at least 90% of the slide applies to the 6-20 rule: 6 sentences per paragraph and 20 words per sentence.

Similarities and Differences Between Classes

This section will analyze the similarities and differences between the diabetic and hypertension participatory class interventions and how these may have influenced the results of the new project. The following table illustrates the similarities and differences between the two interventions based on the elements of participatory interventions that were identified in the literature review and were summarized in the previous section.

Metric	Literature Standard	Hypertension Classes
Content of Education		
➢ Teacher/Educator	X	X
➢ Participants	X	X
➢ Physical space	X	X
➢ Writing materials	X	X
➢ Bring social support	X	X
Teaching Methods		

➢ Coordinate with PCP	X	X
➢ Data Collection Sheet	X	X
➢ Same Group Sizes	X	X
➢ Quizzes	X	X
➢ Focus Groups	X	X
➢ Provide Feedback	X	X
➢ Practice a Skill	X	X
➢ Include Citations	X	X
➢ Define Outcome & Objectives	X	X
➢ Individualize Goals	X	X
➢ Opportunity to Ask Questions	X	X
Health Literacy of Classes		
➢ Lists with Max 7 Items	X	X
➢ Highlight Positive vs Negative	X	X
➢ Limit Medical Jargon	X	X
➢ Font Size between 12 and 14	X	X
➢ Capital Letters	X	X
➢ Numbering Sequencing	X	
➢ 1-2 Syllable Words	X	X
➢ 6-20 Rule	X	X
Data Measured		
➢ Pre and Post Data	X	X
➢ Behavioral Changes via Survey	X	
➢ Health Indicators	X	X
Data Collection		
➢ Data on Attitudes & Behaviors	X	X
Participatory Education Modalities		
➢ Focus Groups/Discussions	X	X
➢ Conversation Map	X	
➢ Cooking Food	X	X
➢ Interactive Videos	X	X
➢ Discussion Cards	X	
➢ Physical Exercise	X	X
➢ Unspecified	X	
Behavioral Measures		
➢ Surveys based on Evidence	X	X
➢ Behavior measured pre and post intervention	X	X
➢ Measure Self-Efficacy	X	
Use Existing Surveys for Data	X	X
Measurable Outcomes		
➢ Short-term	X	X
➢ Intermediate	X	X
➢ Long-term	X	X

Similarities and Their Implications

When looking at the above table and comparing the hypertension participatory educational classes to the standard set in the literature, there are more similarities than differences. To start, the hypertension participatory educational classes had the foundational content identified in the literature needed to teach a class that is considered to be participatory. This was also mirrored in Logic Model when comparing the diabetic classes to the hypertension classes. The Logic Model is derived from evidence-based literature and is comprehensive and the new intervention followed this Logic Model. Therefore, the same materials and content are needed to conduct a participatory class no matter what the subject is. These materials include an educator, participants, a physical space to hold the class, a didactic lesson and writing materials. Very interestingly, the literature emphasizes the need for the class participants to bring friends and/or family members to the classes for social and moral support. This was also mirrored in the diabetic and hypertension classes as vital and fundamental to conduct a participatory educational class. This may suggest that having loved ones around the person who is trying to make a behavioral change is imperative to not only make the change but have that change last.

The teaching methods that should be included in a participatory educational class that are discussed in the literature include focus groups with the same number of people in them, skill building, goal setting and various didactic lesson-related objectives. All of these were mirrored in the hypertension classes. A curious characteristic to point out here is that the literature emphasizes that these classes are to be in collaboration with the participant's primary care provider (PCP). So, instead of looking at these outpatient classes as an accessory or separated from the education that is given during a provider's visit, the literature is emphasizing the importance of having the PCP involved in these classes in some way. According to the literature,

the PCP can be as involved as just knowing that their patient is involved in these participatory classes and acknowledging this to the patient to the PCP teaching the classes. All types of involvement by the PCP are accepted and considered standard. Having the PCP's involvement creates a holistic, supportive and harmonious unification of the patient and provider relationship. It produces a teamwork aspect of the relationship and shows that the provider is in the patient's corner when they venture to these outpatient classes. The hypertension classes did involve the PCP in some way-usually just having the PCP know that their patient was involved in the class was the extent of their involvement. However, this does satisfy the criteria created by the literature in having the PCP "collaborate" with their patient during these outpatient, participatory classes.

It is essential to take into account the health literacy of the participatory classes in order for there to be maximal comprehension by the participants. The hypertension classes were very friendly to those with a low health literacy level which was very beneficial seeing as more than half of their participants did not finish high school. The hypertension classes used multiple illustrations to get the lessons across. This, coupled with hands on skills to ensure understanding of the topic, may be the reason why the intervention was successful. The one room for improvement that the hypertension classes had in relationship to the health literacy of their lessons was that they needed to utilize more number sequencing versus bullet points when listing things in order on their PowerPoints.

Differences and Their Implications

The first difference discussed here involves the schedule of surveying the participants on their behavioral changes. Behavioral changes were surveyed during the first class and at the one month follow up which leaves room for improvement. If the participant was lost to follow up,

which was 13 people in the experimental group of the hypertension classes, that data was lost on those participants. Perhaps the 13 people lost to follow up changed their behaviors during the intervention (from first class to fourth class), but because they were not surveyed at the end of the fourth class, we don't have the data on those patients. This may have influenced the outcome. Surveying all the patients after class four on their behavioral changes would give us a clearer picture on the effectiveness of the intervention.

Another difference that was noted between the literature and the hypertension participatory classes included the actual participatory modalities. During the literature review, there were 7 common participatory activities that were talked about most. These can be reviewed in detail in Chapter II. The hypertension classes utilized 4 out of the 7 activities during their intervention. Although this is a fair number of activities and the literature doesn't specify how many activities should be included in a participatory educational program, one might argue that the more participatory activities an intervention has, the more opportunities the lesson has to communicate with each participant. While the hypertension classes used participatory activities that favor all learning types, not using all 7 of the most common participatory activities is something to take note of.

A big difference that was seen between the two classes was the inclusion of self-efficacy. As previously discussed in Chapter II, the literature revealed that self-efficacy is the key ingredient to transforming a lesson into a life-long habit and is imperative to have when creating sustained behavioral changes. Although one might argue that having a participants loved one come to the class may create self-efficacy, there was not much more done to create this in the hypertension classes. There was one question in the survey that touched on self-efficacy that asked about the participant's confidence in managing their medications for hypertension,

however, this was not asked again at the 1-month follow up. If self-efficacy is used to make sustained behavioral changes, why is it not tested after the completion of the intervention to ensure that a knowledge and behavioral change is sustained? Self-efficacy is important in the Logic Model originally created for the diabetic classes that are based in the literature and was not addressed as robustly in the new hypertension classes. This is a very big gap that is seen from the literature to the hypertension participatory classes and it may indeed have future implications on this intervention. Indeed, there is a 1-month follow up on behaviors and attitudes, but when it comes to life-long changes there is no follow up and no emphasis on self-efficacy which can ensure the lessons learned were incorporated daily into the lives of the participants. We must learn from this in that self-efficacy goes hand-in-hand with the lesson being taught and provides the greatest opportunity for sustained behavioral change. One might argue that self-efficacy was being taught or used during the participatory activities, however, the hypertension classes not objectively measure this characteristic and, again, it is not measured after the completion of this intervention at a 6-month or 1-year post intervention survey.

Refining the Logic Model

Based on the analysis of the diabetic and hypertension participatory classes, it's important to determine how the Logic Model mapped onto the new participatory intervention by comparing the Logic Model to both interventions. The target population pivoted when the intervention of the DNP project pivoted, however, underserved ambulatory patients were still a common factor in both interventions. The new intervention looked at a different chronic disease population than diabetes but the foundational elements remained the same. The resources/inputs, activities and outputs were the same and measured in both interventions, suggesting that the fundamental parts of each intervention were identical.

The HTN classes followed the Logic Model and did measure short, intermediate and long-term outcomes. The intermediate outcomes were based on the indicators of their specific disease states. For example, the Logic Model for the diabetic classes looked at changes in Hemoglobin A1C which the evidence shows is an appropriate indicator for managing type 2 diabetes. For the HTN classes, blood pressure was assessed, which is an appropriate indicator for assessing HTN. To operationalize behavioral changes, intermediate outcome were taken during the intervention. These outcomes included measuring attitudes via the BMQ survey, measuring knowledge with another validated survey, measuring behaviors via the ALI survey and of course, measuring blood pressure. Long-term outcomes were measured 1 month after the intervention and included BP and behaviors as well as self-reported skills that were acquired during the intervention. Whether the patients were able to control or reverse their HTN with these operationalized long-term outcomes cannot be determined.

An obvious difference seen in the Logic Model by the HTN classes is the omission of self-efficacy. The HTN classes did not objectively measure self-efficacy and therefore has neglected a foundational element that the literature deems imperative when conducting participatory educational classes. Therefore, there is not an operationalization of self-efficacy for the Logic Model for HTN classes.

CHAPTER VI: CONCLUSIONS AND IMPLICATIONS

This last chapter will conclude the paper by discussing the results of the hypertension participatory classes. These results will be compared to what the literature indicates should be seen at the conclusion of a participatory class and those differences will be discussed and suggestions made for future studies.

Results

This section will discuss the results of the hypertension participatory education intervention. Data analysis was focused on the experimental group only. There were 60 participants who completed classes 1 through 4 in the experimental group. The average participant was 56 years old, female, Hispanic, not a high school diploma recipient and made $20,000 a year or less. See table 1 below for demographic details of the participants in the experimental group

Table 1. Participant characteristics, full cohort (N=60)

Characteristic	Value
Age, mean ± SD, years	**56.1 ± 8.6**
Gender, no./N (%) female	**44/60 (73.3%)**
Education, no./N (%) high school or beyond	**14/60 (23.3%)**
Ethnicity, no./N (%) Hispanic	**60/60 (0%)**
Nativity, no./N (%) born outside U.S.	**59/60 (98.3%)**
Income, no./N (%)	**60/60 (100%)**
Below $20,000 per year	**30/60 (50%)**
$20,000 or greater	**18/60 (30%)**
Not reported	**12/60 (20%)**

Table 2 shows the changes in the participant's knowledge, attitudes and behaviors in the experimental group from class one to class four. The data shows that overall, the patient's attitudes towards medications improved in that they felt they were necessary and not overused, harmful or concerning and therefore became more adherent to taking their anti-hypertensive medication(s). In regards to lifestyle changes, participants seemed to engage more in healthy eating habits, exercising and relaxation techniques after the end of the fourth class. However, some patients were still not meeting the recommended 7-9 hours of sleep a night.

Table 2. Pre-Post comparisons of knowledge, attitudes and behaviors, full cohort (N=60)

Measure	Start of class	End of class
Knowledge		
Confidence managing BP medications	32.2 ± 6.2	31.7 ± 5.8
Attitudes		
Beliefs that own BP meds are necessary	18.7 ± 4.6	20.1 ± 4.1
Beliefs that own BP meds are concerning	17.9 ± 3.7	15.3 ± 4.2
Net beliefs about own BP meds (necessity-concerns)	0.7 ± 4.8	4.8 ± 5.8
Beliefs that meds are overused in general	13.5 ± 3.1	10.2 ± 2.2
Beliefs that meds are harmful in general	12.5 ± 2.9	11.7 ± 2.2
Behaviors		
Arizona Lifestyle Index Score	4.2 ± 1.2	4.4 ± 1.3
# days in past week…		
Ate 5+ servings of fruits/vegetables	4.4 ± 2.2	5.0 ± 1.9
Ate breakfast	6.3 ± 1.8	6.0 ± 1.9
Did 30+ minutes of moderate exercise	4.1 ± 2.4	5.0 ± 2.1
Engaged in activity to relax, manage stress	3.2 ± 3.0	3.5 ± 2.6
Did breathing exercise for stress reduction	2.0 ± 2.5	3.2 ± 2.7
Got between 7-9 hours of sleep	4.3 ± 2.8	4.2 ± 2.6
Felt rested after waking from sleep	4.0 ± 2.6	4.2 ± 2.5
Spent time nurturing relationship with loved ones	5.0 ± 2.7	4.5 ± 2.7
Practiced behavior 5+ days in past week, no./N (%)		
Ate 5+ servings of fruits/vegetables	59/60 (98.3%)	59/60 (98.3%)
Ate breakfast	52/60 (86.6%)	48/60 (80%)
Did 30+ minutes of moderate exercise	25/60 (41.6%)	40/60 (66.6%)
Engaged in activity to relax, manage stress	23/60 (38.3%)	25/60 (41.6%)
Did breathing exercise for stress reduction	12/60 (20%)	19/60 (31.6%)
Got between 7-9 hours of sleep	34/60 (56.6%)	28/60 (46.6%)
Felt rested after waking from sleep	27/60 (45%)	28/60 (46.6%)
Spent time nurturing relationship with loved ones	38/60 (63.3%)	31/60 (51.6%)
Medication nonadherence		
Due to cost	17/60 (28.3%)	11/60 (18.3%)
Due to beliefs/concerns	31/60 (51.6%)	27/60 (45%)
Unintentional	31/60 (51.6%)	24/60 (40%)
Any	46/60 (76.6%)	38/60 (63.3%)

There were 47 out of 60 participants in the experimental group that followed up 1-month after the intervention to complete the ALI survey and repeat their blood pressure. The average patient was 55 years old, female, did not receive a high school diploma, Hispanic, born outside of the United States and had an annual income of $20,000 or less. Table 3 shows these demographics for the 1-month follow up group.

Table 3. Participant characteristics, 1-month follow-up cohort (N=47)

Characteristic	Value
Age, mean ± SD, years	**55.9 ± 9.2**
Gender, no./N (%) female	**35/47 (74.5%)**
Education, no./N (%) high school or beyond	**13/47 (27.7%)**
Ethnicity, no./N (%) Hispanic	**47/47 (0%)**
Nativity, no./N (%) born outside U.S.	**47/47 (100%)**
Income, no./N (%)	**47/47 (100%)**
Below $20,000 per year	**23/47 (48.9%)**
$20,000 or greater	**15/47 (31.9%)**
Not reported	**9/47 (19.1%)**

Table 4 illustrates the changes in the participant's knowledge, attitudes and behaviors in the experimental group at the 1-month follow up which included 47 people surveyed. These answers were acquired from ALI survey. Table 4 shows that the participant's attitudes towards blood pressure medications improved in that the participants felt they were necessary, not harmful, overused or concerning. Behaviors seemed to improve as well in that more participants answered that they ate more fruits and vegetables, exercised, utilized stress reducers and got the recommended hours of sleep a night after the intervention than was answered during the first

class. Surprisingly, knowledge and confidence in managing blood pressure medications actually decreased and nonadherence to blood pressure medication(s) due to beliefs/concerns was the same from pre to post intervention.

Table 4. Pre-Post comparisons of knowledge, attitudes and behaviors, 1-month follow-up cohort (N=47)

Measure	Start of class	End of class
Knowledge		
Confidence managing BP medications	31.9 ± 6.7	30.9 ± 5.9
Attitudes		
Beliefs that own BP meds are necessary	18.6 ± 4.6	19.9 ± 4.4
Beliefs that own BP meds are concerning	17.7 ± 4.0	15.1 ± 4.1
Net beliefs about own BP meds (necessity-concerns)	0.9 ± 4.5	4.8 ± 5.8
Beliefs that meds are overused in general	13.6 ± 3.1	10.2 ± 2.2
Beliefs that meds are harmful in general	12.3 ± 3.0	11.7 ± 2.3
Behaviors		
Arizona Lifestyle Index Score	4.2 ± 1.3	4.6 ± 1.3
# days in past week…		
Ate 5+ servings of fruits/vegetables	4.4 ± 2.2	4.9 ± 1.9
Ate breakfast	6.6 ± 1.4	6.2 ± 1.9
Did 30+ minutes of moderate exercise	4.3 ± 2.4	4.5 ± 2.4
Engaged in activity to relax, manage stress	3.1 ± 3.0	4.2 ± 2.6
Did breathing exercise for stress reduction	2.3 ± 2.6	3.3 ± 2.9
Got between 7-9 hours of sleep	4.3 ± 2.8	4.4 ± 2.6
Felt rested after waking from sleep	3.8 ± 2.6	4.6 ± 2.4
Spent time nurturing relationship with loved ones	4.9 ± 2.7	4.8 ± 2.6
Practiced behavior 5+ days in past week, no./N (%)		
Ate 5+ servings of fruits/vegetables	22/47 (46.8%)	28/47 (59.5%)
Ate breakfast	42/47 (89.3%)	40/47 (85.1%)
Did 30+ minutes of moderate exercise	22/47 (46.8%)	24/47 (51%)
Engaged in activity to relax, manage stress	17/47 (36.1%)	22/47 (46.8%)
Did breathing exercise for stress reduction	11/47 (23.4%)	18/47 (38.2%)
Got between 7-9 hours of sleep	26/47 (55.3%)	27/47 (57.4%)
Felt rested after waking from sleep	19/47 (40.4%)	27/47 (57.4%)
Spent time nurturing relationship with loved ones	29/47 (61.7%)	28/47 (59.5%)

Medication nonadherence		
Due to cost	12/47 (25.5%)	3/47 (6.3%)
Due to beliefs/concerns	24/47 (51%)	24/47 (51%)
Unintentional	21/47 (44.6%)	23/47 (48.9%)
Any	35/47 (74.4%)	33/47 (70.2%)

Table 5 demonstrates the methods in which participants attempted to adhere to their medications. These strategies include setting an alarm to remind them to take their medications, writing a note, having someone else remind them, using a daily pill organizer, keeping their medications in the same spot to remind them, using an app on their phone or another strategy. Comparing the first class to the fourth class, medication adherence improved overall with the most popular strategy utilized was keeping the medications in a consistent location to help remind them and using a daily pill organizer like a pill box.

Table 5. Pre-Post comparisons of use of medication adherence strategies, 1-month follow-up cohort (N=47)

Measure	Start of class	After class
Medication Adherence Strategies Inventory Score, mean ± SD	3.4 ± 1.9	3.5 ± 1.4
Practices strategy at least some of the time, no./N (%)		
Set an alarm to remind yourself	5/47 (10.6%)	7/47 (14.8%)
Write yourself a note	3/47 (6.4%)	5/47 (10.6%)
Have someone else remind you to take your medication	6/47 (12.7%)	8/47 (17%)
Keep meds in consistent location to help you remember	46/47 (97.8%)	46/47 (97.8%)
Use a pill box or daily pill organizer	21/47 (44.6%)	19/47 (40.4%)
Use an app on your phone to remind you	3/47 (6.4%)	3/47 (6.4%)
Use another strategy	0/47 (0%)	2/47 (4.2%)

Table 6 compares blood pressure to participants from the first class to those who followed up 1-month post-intervention. The total number of people who followed up 1-month

post intervention was 47. At the start of the intervention, the average blood pressure of the class was 141/85 and 1-month post-intervention the average blood pressure was 137/83 showing an improvement overall.

Table 6. Pre-Post comparisons of blood pressure, 1-month follow-up cohort (N=47)

Measure	Start of class	End of class
Systolic Blood Pressure, mean ± SD, mmHg	141.6 ± 17.1	137.7 ± 14.0
Diastolic Blood Pressure, mean ± SD, mmHg	85.0 ± 10.0	83.2 ± 8.6
SBP < 140 mmHg, no./N (%)	20/47 (42.5%)	22/47 (46.8%)
DBP < 90 mmHg, no./N (%)	32/47 (68%)	35/47 (74.4%)
BP < 140/90 mmHg, no./N (%)	19/47 (40%)	20/47 (42.5%)
BP in Green Zone <120 / <80	1/47 (2%)	2/47 (4%)
BP in Yellow Zone 120-140 / 80-90	18/47 (38%)	18/47 (38%)
BP in Orange Zone 140-179 / 90-109	27/47 (57%)	23/47 (49%)
BP in Red Zone >180 / >110	0/47 (0%)	0/47 (0%)

Conclusions & Implications

Reflecting back on the literature and what it says about participatory educational classes, there is much to unpack. The literature shows, when diving into participatory education in relationship to type 2 diabetes, that self-efficacy is a vital component for a patient to obtain if they are to take a learning element and turn it into a sustained behavioral change (Carey & Forsyth, 2009; Vijn et al., 2018; Kewming et al., 2016; Secco et al., 2019; Stenov et al., 2016; Christoffersen et al., 2020; Pals et al., 2016; Flores-Luevano et al., 2020; Molsted et al., 2012; McElfish et al., 2019; Yazdanpanah et al., 2012; Castillo et al., 2010; Adolfsson et al., 2008). Due to the purpose of this project being initially directed towards type two diabetics, one could imagine that self-efficacy was geared only towards this population. However, after having to pivot the project towards hypertensive patients, the significance of self-efficacy is still evident in

the literature. Self-efficacy would have to be measured in the new intervention to determine how big of a role it plays with the new population.

Developing a Logic Model geared towards a specific population (type two ambulatory patients with diabetes) and then discovering that it corresponds to another population with a different chronic disease (hypertension) was surprising. This suggests that the Logic Model created and Logic Models in general are essential to help develop, measure and explain any intervention based on evidence. This also says something about the strength of the Logic Model created and suggests that at the core of participatory educational classes are fundamental components to the classes that need to be included to maximize the comprehension of its participants no matter what the subject is. You can refer to what these components are in Chapter V Section 2. This can suggest that clinical outcome metrics need to match the population, however, the fundamental components are similar across the board.

A big difference between the diabetic and hypertension participatory educational classes was the time interval when the outcomes were examined. In the diabetic classes-and also mirrored in the literature and in the Logic Model- there needs to be short, intermediate and long-term outcomes that are measured to ensure that knowledge was gained and sustained throughout a specific time period. Based on the hypertension participatory class curriculum, long term outcomes were measured but there were only 3 aspects measured at the 1-month post-intervention. First, blood pressure was not measured during the intervention-it was only measured at the first class and at the 1-month follow up. Blood pressure, being the center of the HTN classes, should have been measured after each class and therefore been a short, intermediate and long-term outcome in order to see the trends in blood pressure over time. Furthermore, it can be argued that 1-month post-intervention is not long term enough for the

outcome. Because there isn't data collected after 1 month of the intervention, it does not allow us to draw conclusions on knowledge gained and behavioral changes made by the participants after the conclusion of the intervention or allow us to see if the patients obtained self-efficacy during their intervention. This poses a huge problem because, as previously discussed, self-efficacy is vital to the patient's sustained behavioral changes. If patients are not making behavior changes in the long-term, we need to go back to the intervention and tailor some things in order to see a change in patient's behaviors. It is highly suggested that these hypertension participatory classes re-evaluate the participants at a longer time period than 1 month after the intervention in order to collect long term outcomes to be able to make inferences if the skills and knowledge learned during the intervention translated to the participant's everyday lives longer than 1 month after the intervention ended.

In conclusion, if you are considering developing a participatory educational class, there are some things to consider. First, include the evidence-based foundational components that make up a basic, comprehensive participatory educational classes that can be found in Chapter V Section 2 of this paper. Second, the educational classes need to include ways to build self-efficacy to ensure that the skills and knowledge that are being taught during the intervention are carried to the participant's daily lives. Next, a Logic Model is critical. The Logic Model constructed in this project was based on a systematic review of the literature. It was found to generalize from one type of intervention to another type of intervention suggesting the strength of the model for providing a solid, robust framework for participatory education for a potentially wide variety of patient populations.

References

Adolfsson, E., Starrin, B., Smide, B., & Wikblad, K. (2008). Type 2 diabetic patients'
experiences of two different educational approaches—a qualitative study. *International
Journal of Nursing Studies*, *45*(7), 986–994.
https://doi.org/10.1016/j.ijnurstu.2007.07.007

Aekplakorn, W., Tantayotai, V., Numsangkul, S., Tatsato, N., Luckanajantachote, P., &
Himathongkam, T. (2019). Evaluation of a community-based diabetes prevention
program in thailand: A cluster randomized controlled trial. *Journal of Primary Care &
Community Health*, *10*, 215013271984737. https://doi.org/10.1177/2150132719847374

An effective model of diabetes care and education: Revising the aade7 self-care behaviors®.
(2020). *The Diabetes Educator*, *46*(2), 139–160.
https://doi.org/10.1177/0145721719894903

Berry, J. (2019, April 1). Statistics and facts about type 2 diabetes. *Medical News Today*.

Bukhsh, A., Khan, T., Sarfraz Nawaz, M., Sajjad Ahmed, H., Chan, K., & Goh, B.-H. (2019).
association of diabetes knowledge with glycemic control and self-care practices among
Pakistani people with type 2 diabetes mellitus. *Diabetes, Metabolic Syndrome and
Obesity: Targets and Therapy*, *Volume 12*, 1409–1417.

Balagopal, P., Kamalamma, N., Patel, T. G., Misra, R., Misra, R., Balagopal, P., Patel, T. G., &
Kamalamma, N. (2012). A community-based participatory diabetes prevention and
management intervention in rural india using community health workers. *The Diabetes
Educator*, *38*(6), 822–834. https://doi.org/10.1177/0145721712459890

Castillo, A., Giachello, A., Bates, R., Concha, J., Ramirez, V., Sanchez, C., Pinsker, E., & Arrom, J. (2010). Community-based diabetes education for latinos. *The Diabetes Educator*, *36*(4), 586–594. https://doi.org/10.1177/0145721710371524

Center for disease control and prevention. (2019, May 15). *Diabetes testing*. Centers for Disease Control and Prevention. https://www.cdc.gov/diabetes/basics/getting-tested.html

Characteristics of an Effective Health Education Curriculum. (2019, May 29). In *Center for Disease Control and Prevention* . Retrieved from https://www.cdc.gov/healthyschools/sher/characteristics/index.htm

Christoffersen, L., Hansen, A. K., Pals, R., Willaing, I., Siersma, V., & Olesen, K. (2018). Effect of a participatory patient education programme (next education) in group-based patient education among danes with type 2 diabetes. *Chronic Illness*, *16*(3), 226–236. https://doi.org/10.1177/1742395318799843

Federally Qualified Health Centers. (2018, May). In *Health Resources & Services Administration*. Retrieved from https://www.hrsa.gov/opa/eligibility-and-registration/health-centers/fqhc/index.html

Elasy, T. A., Ellis, S. E., Brown, A., & Pichert, J. W. (2001). A taxonomy for diabetes educational interventions. *Patient Education and Counseling*, *43*(2), 121–127. https://doi.org/10.1016/s0738-3991(00)00150-6

Eriksson, M., & Mittelmark, M. B. (2017). The sense of coherence and its measurement. In *The handbook of salutogenesis* (pp. 97–103). Springer International Publishing. https://doi.org/10.1007/978-3-319-04600-6_12

Falkenberg, M., Elwing, B. E., Göransson, A. M., Hellstrand, B. S., & Riis, U. M. (1986). Problem oriented participatory education in the guidance of adults with non-insulin-

treated type-ii diabetes mellitus. *Scandinavian Journal of Primary Health Care*, *4*(3), 157–164. https://doi.org/10.3109/02813438609014823

Fitzgerald, J. T., Funnell, M. M., Hess, G. E., Barr, P. A., Anderson, R. M., Hiss, R. G., & Davis, W. K. (1998). The reliability and validity of a brief diabetes knowledge test. *Diabetes Care*, *21*(5), 706–710. https://doi.org/10.2337/diacare.21.5.706

Flores-Luevano, S., Pacheco, M., Shokar, G. S., Dwivedi, A., & Shokar, N. K. (2020). Impact of a culturally tailored diabetes education and empowerment program in a mexican american population along the us/mexico border: A pragmatic study. *Journal of Clinical Medicine Research*, *12*(8), 517–529. https://doi.org/10.14740/jocmr4273

Graham, I., & Logan, J. (2004). Innovatiions in knowledge transfer and continuity of care. *Canadian Journal of Nursing Research*, *36*(2), 89–103.

Grenci, A. (2010). Applying new diabetes teaching tools in health-related extension programming. *Journal of Extension*, *48*(1). http://facilitators.healthyinteractions.com/files/JOE_v48_1iw5_1.pdf

Health resources and services administration. (2017, April 21). *Federally qualified health centers*. Official web site of the U.S. Health Resources & Services Administration. https://www.hrsa.gov/opa/eligibility-and-registration/health-centers/fqhc/index.html

Herdman, M., Gudex, C., Lloyd, A., Janssen, M., Kind, P., Parkin, D., Bonsel, G., & Badia, X. (2011). Development and preliminary testing of the new five-level version of eq-5d (eq-5d-5l). *Quality of Life Research*, *20*(10), 1727–1736. https://doi.org/10.1007/s11136-011-9903-x

Ibrahim, N., Ming Moy, F., Awalludin, I., Mohd Ali, Z., & Ismail, I. (2016). Effects of a community-based healthy lifestyle intervention program (co-help) among adults with

prediabetes in a developing country: A quasi-experimental study. *PLOS ONE*, *11*(12), e0167123. https://doi.org/10.1371/journal.pone.0167123

Kewming, S., D'Amore, A., & Mitchell, E. K. (2016). Conversation maps and diabetes education groups: An evaluation at an australian rural health service. *Diabetes Spectrum*, *29*(1), 32–36. https://doi.org/10.2337/diaspect.29.1.32

Lin, S.-P., & Wang, M.-J. (2012). Applying the transtheoretical model to investigate behavioural change in type 2 diabetic patients. *Health Education Journal*, *72*(2), 189–202. https://doi.org/10.1177/0017896912437495

McElfish, P. A., Rowland, B., Riklon, S., Aitaoto, N., Sinclair, K. A., Ima, S., Kadlubar, S. A., Goulden, P. A., Hudson, J. S., Mamis, S., & Long, C. R. (2019). Development and evaluation of a blood glucose monitoring youtube video for marshallese patients using a community-based participatory research approach. *Policy, Politics, & Nursing Practice*, *20*(4), 205–215. https://doi.org/10.1177/1527154419872834

McGuire, B. E., Morrison, T. G., Hermanns, N., Skovlund, S., Eldrup, E., Gagliardino, J., Kokoszka, A., Matthews, D., Pibernik-Okanović, M., Rodríguez-Saldaña, J., de Wit, M., & Snoek, F. J. (2009). Short-form measures of diabetes-related emotional distress: The problem areas in diabetes scale (paid)-5 and paid-1. *Diabetologia*, *53*(1), 66–69. https://doi.org/10.1007/s00125-009-1559-5

Meigs, J. B. (2009, July). *Multiple biomarker prediction of type 2 diabetes | diabetes care*. American diabetes association. https://care.diabetesjournals.org/content/32/7/1346

Molsted, S., Tribler, J., Poulsen, P. B., & Snorgaard, O. (2011). The effects and costs of a group-based education programme for self-management of patients with type 2 diabetes. a

community-based study. *Health Education Research*, *27*(5), 804–813.

https://doi.org/10.1093/her/cyr053

Morris, S. B., Huang, J., Zhao, L., Sergent, J. D., & Neuhengen, J. (2014). Measurement

equivalence of the empowerment scale for white and black persons with severe mental

illness. *Psychiatric Rehabilitation Journal*, *37*(4), 277–283.

https://doi.org/10.1037/prj0000069

National Action Plan to Improve Health Literacy. (2019). In *U.S. Department of Health and

Human Services, Office of Disease Prevention and Health Promotion*. Retrieved from

https://health.gov/sites/default/files/2019-09/Health_Literacy_Action_Plan.pdf

Osborne, R. H., Elsworth, G. R., & Whitfield, K. (2007). The health education impact

questionnaire (heiq): An outcomes and evaluation measure for patient education and self-

management interventions for people with chronic conditions. *Patient Education and*

Counseling, *66*(2), 192–201. https://doi.org/10.1016/j.pec.2006.12.002

Pals, R., Olesen, K., & Willaing, I. (2016). What does theory-driven evaluation add to the

analysis of self-reported outcomes of diabetes education? a comparative realist evaluation

of a participatory patient education approach. *Patient Education and Counseling*, *99*(6),

995–1001. https://doi.org/10.1016/j.pec.2016.01.006

Pinchera, B., DelloIacono, D., & Lawless, C. A. (2018). Best practices for patient self-

management: Implications for nurse educators, patient educators, and program

developers. *The Journal of Continuing Education in Nursing*, *49*(9), 432–440.

https://doi.org/10.3928/00220124-20180813-09

Reed, S., Shell, R., Kassis, K., Tartaglia, K., Wallihan, R., Smith, K., Hurtubise, L., Martin, B.,

Ledford, C., Bradbury, S., Bernstein, H., & Mahan, J. D. (2014). Applying adult learning

practices in medical education. *Current Problems in Pediatric and Adolescent Health Care*, *44*(6), 170–181. https://doi.org/10.1016/j.cppeds.2014.01.008

Ritter, P. L., Lorig, K., & Laurent, D. D. (2016). Characteristics of the spanish- and english-language self-efficacy to manage diabetes scales. *The Diabetes Educator*, *42*(2), 167–177. https://doi.org/10.1177/0145721716628648

Ruggiero, L., Moadsiri, A., Butler, P., Oros, S. M., Berbaum, M. L., Whitman, S., & Cintron, D. (2010). Supporting diabetes self-care in underserved populations. *The Diabetes Educator*, *36*(1), 127–131. https://doi.org/10.1177/0145721709355487

Secco, M., De Campos, T., Rosa, A., De Domenico, E., Andrade Frederico, G., Monteiro, O., & Gamba, M. (2019). Educational program to promote the self-care of people with diabetes mellitus. *Avances en Enfermería*, *37*(2), 169–179. https://doi.org/10.15446/av.enferm.v37n2.72316

Seley, J., & Weinger, K. (2007). The state of the science on nursing best practices for diabetes self-management. *The Diabetes Educator*, *33*(4), 616–626. https://doi.org/10.1177/0145721707305121

Shen, L., Condit, C. M., & Wright, L. (2009). The psychometric property and validation of a fatalism scale. *Psychology & Health*, *24*(5), 597–613. https://doi.org/10.1080/08870440801902535

Simply Put: A guide for creating easy-to-understand materials. (n.d.). In *Center for Disease Control and Prevention*. Retrieved from https://www.cdc.gov/healthliteracy/pdf/simply_put.pdf

Smith, J. D., Li, D. H., & Rafferty, M. R. (2020). The implementation research logic model: A

    method for planning, executing, reporting, and synthesizing implementation projects.

    Implementation Science, *15*(1). https://doi.org/10.1186/s13012-020-01041-8

Stenov, V., Henriksen, J., Folker, A. P., Skinner, T. C., & Willaing, I. (2015). Educator talk ratio

    as a quality indicator in group-based patient education. *Health Education Journal*, *75*(3),

    259–269. https://doi.org/10.1177/0017896915574556

Thurston, M., Bourg, C. A., Phillips, B., & Huston, S. A. (2015). Impact of health literacy level

    on aspects of medication nonadherence reported by underserved patients with type 2

    diabetes. *Diabetes Technology & Therapeutics*, *17*(3), 187–193.

    https://doi.org/10.1089/dia.2014.0220

Toobert, D. J., Hampson, S. E., & Glasgow, R. E. (2000). The summary of diabetes self-care

    activities measure: Results from 7 studies and a revised scale. *Diabetes Care*, *23*(7), 943–

    950. https://doi.org/10.2337/diacare.23.7.943

Verhaak, P. F. M., Bensing, J., & van Dulmen, A. M. (1998). Communication in health

    care. *Patient Education and Counseling*, *34*.

Vermeir, P., Vandijck, D., Degroote, S., Peleman, R., Verhaeghe, R., Mortier, E., ... &

    Vogelaers, D. (2015). Communication in healthcare: a narrative review of the literature

    and practical recommendations. *International journal of clinical practice*, *69*(11), 1257-

    1267.

Vijn, T. W., Wollersheim, H., Faber, M. J., Fluit, C. G., & Kremer, J. M. (2018). Building a

    patient-centered and interprofessional training program with patients, students and care

    professionals: Study protocol of a participatory design and evaluation study. *BMC Health*

    Services Research, *18*(1). https://doi.org/10.1186/s12913-018-3200-0

What is an FQHC? (2021). FQHC. Retrieved May 15, 2021, from https://www.fqhc.org/what-is-an-fqhc

Yazdanpanah, B., Safari, M., Yazdanpanah, S., Angha, P., Karami, M., Emadi, M.,

Yazdanpanah, S., & Poorbehesht, A. (2012). The effect of participatory community-based diabetes cares on the control of diabetes and its risk factors in western suburb of yasouj, iran. *Health Education Research*, *27*(5), 794–803.

https://doi.org/10.1093/her/cys079

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