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## EVALUATION OF A HANDS-ON COOKING CLASS AND ITS EFFECTS ON SELF-EFFICACY IN RELATION TO HEALTHY EATING IN TYPE 2 DIABETICS

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EVALUATION OF A HANDS-ON COOKING CLASS AND ITS EFFECTS ON SELF-EFFICACY IN RELATION TO HEALTHY EATING IN TYPE 2 DIABETICS

By

Codi Jenshak-Gorzinski

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EVALUATION OF A HANDS-ON COOKING CLASS AND ITS EFFECTS ON SELF-EFFICACY IN RELATION TO HEALTHY EATING IN TYPE 2 DIABETICS

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## ABSTRACT

### EVALUATION OF A HANDS-ON COOKING CLASS AND ITS EFFECTS ON SELF-EFFICACY IN RELATION TO HEALTHY EATING IN TYPE 2 DIABETICS

By

Codi Jenshak-Gorzinski

The prevalence of Type 2 diabetes is alarming and poses a great threat to U.S. national health. Chronic diabetes can lead to serious conditions such as heart attack and stroke, and can result in premature mortality (World Health Organization, 2018). Diabetes can be prevented or treated by eating a healthy diet. Cooking classes are a potential way to improve American's knowledge of nutritional principles and help them become confident that they have the capacity to eat a healthy diet. The purpose of this DNP project was to determine if participation in cooking classes enhanced self-efficacy as it pertains to healthy nutritional intake patterns in adults with type 2 diabetes. Self-efficacy was measured using a questionnaire and the Social Cognitive Theory was used as a theoretical framework. Data was analyzed with a Wilcoxon Signed-Rank Test which compared participants' responses on pre-class self-efficacy to post-class self-efficacy. After comparing differences in self-efficacy, a significant increase was observed for the following categories: ability to consume recommended daily fruit intake, knowledge of recommended daily vegetable intake, knowledge of the three major CHO groups, knowledge of how simple and complex CHOs affect blood glucose levels, knowledge of good fiber source, and knowledge of who creates websites ending in .com. However, a significant increase in self-efficacy was not observed for using app/websites to make healthy food choices. These findings show that CCB has the capacity to improve participants' self-efficacy, which will allow them to engage in healthy cooking and eating habits, and potentially yield positive health benefits.

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CODI A JENSHAK-GORZINSKI

## DEDICATION

I dedicate this project to my husband, family, friends, and coworkers who have stood by me throughout the completion of this project and my degree. Thank you for your continued love and support!

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## Chapter One

### Introduction

Diabetes poses a great threat to national health. Diabetes is categorized into two types, type 1 diabetes (T1D) and type 2 diabetes (T2D). In T1D, the body does not produce insulin (American Diabetes Association, 1995-2020). Whereas, in T2D, the body does not use insulin properly (American Diabetes Association, 1995-2020). It is currently estimated that over 30 million people in the United States (U.S.) have diabetes and roughly 90-95% of this group have type 2 diabetes (CDC, 2021b). The prevalence of type 2 diabetes is alarming. Both types of diabetes are characterized by high levels of sugar in the blood (Harvard Health Publishing, 2018). High blood sugars can impose damage on one's body in an acute or chronic fashion. Acutely, high blood sugars can lead to life-threatening conditions such as hyperosmolar hyperglycemic syndrome (HHS) and diabetic ketoacidosis (DKA) (Harvard Health Publishing, 2018). Chronic high blood sugar levels can lead to the development of blindness, kidney failure, heart attack, stroke, and lower limb amputation (World Health Organization, 2018).

Diabetes can also result in premature mortality (Tabish, 2007). It is estimated that those with diabetes die 12 to 14 years earlier than they would if they did not have diabetes (Tabish, 2007). Therefore, diabetes can result in decreased quality of life or death for affected individuals. Additionally, diabetes is costly. Individuals with diabetes incur medical costs that are two to five times higher than those of a person without diabetes (Tabish, 2007). Consequently, the societies that diabetics live in must spend more money on healthcare. The World Health Organization estimates that many countries spend up to 15% of annual health budgets on diabetes-related illnesses (Tabish, 2007). In the United States alone, approximately \$237 billion is spent on

yearly medical costs related to diabetes (American Diabetes Association, 2018). There is no doubt that diabetes is a serious concern for the U.S. Due to the urgency and gravity of the issue, the U.S. must place great efforts towards preventing and treating diabetes, especially type 2 diabetes.

### **Background/Significance, Framework and Purpose of Project**

It has been shown that eating a healthy diet can be used to prevent and treat type 2 diabetes (Harvard Health Publishing, 2018). Diets high in whole foods and plant-based options and low in refined carbohydrates and animal products have shown that they are potent protectors against type 2 diabetes (Devries et al., 2014). Further evidence exists that T2D is potentially reversible when eating low-calorie diets (Hallberg, 2019). Therefore, it has been demonstrated just how important of a role that a healthy diet can play in preventing and treating diabetes. To eat healthy diets, people must possess a solid knowledge base to guide their dietary choices. After reviewing findings from the International Food Information Council Foundation's 2017 Food and Health Survey, it was clear that many Americans do not possess a knowledge base that allows them to consistently make healthy dietary choices. For example, 45% of those desiring to consume healthy food and beverages could not identify a single food or nutrient associated with weight loss, cardiovascular health, energy, and digestive health (International Food Information Council Foundation, 2017b).

Educational programs such as cooking schools have shown promise in their ability to improve nutritional knowledge and incorporate it into everyday life choices. A cooking class of mention is Kitchen Creations (KC): A Cooking School for People with Diabetes and Their Families. KC teaches participants about new recipes, meal planning strategies, and food

preparation skills so that they learn to manage their dietary habits (New Mexico Department of Health). To evaluate if the lessons improved dietary habits, a quasi-experimental study that analyzes pre-class and post-class comparisons was performed by Archuleta, VanLeeuwen, Halderson, Wells, & Bock (2012). After the class, significant decreases ( $p < .05$ ) were observed for the following nutrient intakes and dietary variables: energy, total fat, saturated fat, carbohydrates, cholesterol, sodium, and percentage of calories from fat in the diet. A significant increase ( $p = .02$ ) was observed for the percentage of calories from protein in the diet (Archuleta et al., 2012).

To help participants achieve these positive changes in actual dietary habits, KC curriculum used a hands-on approach rooted in the social cognitive theory (SCT) (Archuleta et al., 2012). SCT operates on the concept that personal, behavioral, and environmental factors work in a dynamic and reciprocal fashion to influence each other and that all of these factors are important in influencing behavior change. KC also attempted to specifically embrace SCT's principle of self-efficacy, or an individual's confidence in his or her ability to successfully perform a behavior. They enhanced self-efficacy by giving participants the opportunity to practice cooking, food preparation skills, and dishing up appropriate serving sizes and types of food (Archuleta et al., 2012).

Another cooking school that sought to build self-efficacy or in their terms "cooking confidence" was Jamie's Ministry of Food. The thought behind this program was that if they enhanced cooking skills and knowledge, then they could build cooking confidence, which would ultimately improve healthy cooking and food consumption patterns (Flego et al., 2014). To analyze the effectiveness of Jamie's Ministry of Food, a mixed methods quasi-experimental, repeated measures design was utilized to compare a control group against an experimental group.

From this data, they concluded that there was a statistically significant increase ( $p < 0.001$ ) in all cooking confidence measures, self-reported daily vegetable intake, cooking main meals from basic ingredients, and daily fruit intake (Flego et al., 2014). Therefore, this cooking class did advance participants' knowledge and cooking confidence which in turn helped improve healthy eating behaviors.

After reviewing the successes of KC and Jamie's Ministry of Food, among other cooking classes, the value of cooking classes was discovered. From these classes, it was also noted that it was important to use a social learning environment and place emphasis on improving self-efficacy so that behavior change could occur in regards to cooking and eating healthy. The purpose of this DNP project was to determine if participation in cooking classes enhanced self-efficacy as it pertains to healthy nutritional intake patterns in adults with type 2 diabetes. Like KC and Jamie's Ministry of Food, the head researcher's program, Codi's Cooking Basics (CCB), used SCT to help structure the cooking class. As previously explained, SCT's premise is that human learning and behavior change occurs in a social context and that it involves the interplay of the person, their behaviors, and the environment (Boston University School of Public Health, 2018). CCB uses an interactive cooking class to provide a positive, nourishing environment for an individual to learn, grow, and change their cooking and eating habits. Similar to KC and Jamie's Ministry of Food, CCB also employs strategies to specifically increase self-efficacy as it pertains to healthy nutritional intake patterns. CCB improves self-efficacy by providing a strong social model to guide participants, allowing participants to trial their true abilities to cook and eat healthy in class, educating them on unhealthy foods and their negative effects so that they are less likely to eat them, and providing positive reinforcements for healthy behaviors.

## Methods

To obtain subjects for the DNP project evaluating CCB, convenience sampling techniques were utilized by word of mouth and by promotional flyers. Eligible participants for the program were 18 years old or older, were diagnosed with type 2 diabetes by a healthcare provider, had access to the internet, and were residents of Michigan. A minimum of 10 participants were needed in order to conduct this study per the university's Doctor of Nursing Practice project requirements. After 11 reliable participants enrolled, the project was conducted. The study on CCB featured a quasi-experimental design. To determine CCB's effect on self-efficacy, participants completed a questionnaire evaluating pre-class self-efficacy, took part in CCB classes, and then completed the same questionnaire to evaluate post-class self-efficacy.

The CCB classes themselves were held once a week for a total of three weeks. Classes were broadcast on Zoom to be respectful of social distancing practices, as the class took place during the COVID-19 pandemic. Classes were approximately two hours in length. Classes started with a fifteen-to-thirty-minute PowerPoint created and presented by the head researcher. Major presentation topics covered in the classes included macronutrients effects on the body, especially carbohydrates, analysis of food labels, benefits of fruits and vegetables, online health literacy, and Fooducate, which is a free nutrition tracker app that additionally offers food label analysis, diet tips, and recipes. Fooducate is renowned as a former US Surgeon General's Healthy App challenge winner (Edwards, 2012).

To compare differences pre-class/post-class self-efficacy, statistical analyses using Wilcoxon Signed-Rank Test was employed. Pre-class/post-class self-efficacy was evaluated in multiple categories, mainly: ability to consume recommended daily fruit intake, knowledge of

recommended daily vegetable intake, knowledge of the three major carbohydrate (CHO) groups, knowledge of how simple and complex CHOs affect blood glucose levels, knowledge of good fiber source, knowledge of who creates websites ending in .com, and ability to use an app to make healthy food choices. In all categories, except for using app/websites to make healthy food choices, a significant increase in self-efficacy was observed. This is noteworthy because it shows that CCB has the capacity to build confidence in its participants' knowledge and abilities pertaining to healthy cooking and eating habits. Gaining the ability to cook and eat healthy is a great asset to individuals with type 2 Diabetes as it has been shown that eating a healthy diet can be used as a form of treatment for this disease (Harvard Health Publishing, 2018). Food can either be used to create health or to create disease (Dr. T. Colin Campbell, as cited in Jones, 2016). Cooking schools can be used to teach their participants how to make this distinction.

## **Chapter Two**

### **Introduction**

A literature review was performed using Google Scholar, PubMed, and CINAHL databases. Search terms included type 2 diabetes, diabetes, cooking schools, and self-efficacy. The search was limited to articles published in the last 10 to 15 years, with the exception of historical studies. The purpose of this review was to locate current research on cooking schools for those with type 2 diabetes and to discover their outcomes, especially those pertaining to self-efficacy.

### **Effects of Type 2 Diabetes on Society**

Diabetes is a growing epidemic that is a major threat to national health. It is estimated that roughly 30 million people in the United States (U.S.) have diabetes and roughly 90-95% of this group have type 2 diabetes (CDC, 2021b). T2D is a disease where cells throughout the body do not respond appropriately to insulin, a hormone that acts like a key to let sugar from the bloodstream into the cells of the body to use for energy. When cells don't respond normally to insulin, a state of insulin resistance occurs. In this state, the pancreas, the organ responsible for creating insulin, overproduces insulin to try to get cells to respond. Eventually, the pancreas becomes fatigued and cannot continue manufacturing insulin at such a fast pace. As a result, blood sugars rise to uncontrollable levels in the body. When this happens repeatedly over time, T2D takes place (CDC, 2021b).

T2D is a problematic disease because chronic levels of high blood sugar can be severely damaging to the body, potentially causing serious health problems such as: blindness, kidney failure, heart attack, stroke, and lower limb amputation, which ultimately can lead to decreased

quality of life and death (World Health Organization, 2018). In addition to causing severe disease or death, diabetes is also detrimental in regards to national funding. Diabetes costs the nation nearly \$327 billion annually, of which \$237 billion is related to direct medical costs and \$90 billion is attributed to lost productivity (American Diabetes Association, 2018). Thus, type 2 diabetes is among the most pressing and costly medical challenges confronting modern society (American Diabetes Association, 1995-2020). Consequently, our nation should engage in vigorous efforts towards preventing and treating diabetes.

### **Diabetes Prevention and Treatment Efforts**

In regards to diabetes prevention, research shows that diet and diabetes are inherently linked. Studies show that high consumption rates of sugar-sweetened beverages and eating fewer fruits and vegetables increase the risk of developing this disease (Crosta, 2008). Whereas, whole foods, plant-based diets low in refined carbohydrates, and animal products have shown that they are potent protectors against type 2 diabetes (Devries et al., 2014). A 2013 report on the state of U.S. health further confirmed the diet and disease link and concluded that dietary factors are the single most significant risk factor for disease, disability, and premature death (Devries et al., 2014). Thus, diabetes can be substantially prevented or postponed through dietary modifications (US Burden of Disease Collaborators, 2013). Modifying dietary choices can then be used as a powerful tool in preventing the development of T2D.

Therefore, it is critically important that all people know how to self-manage their diets. To evaluate if people are eating healthy diets, their knowledge base should be assessed. To assess knowledge about nutrition, nutritional knowledge classifications should first be discussed. These classifications separate nutritional knowledge into three main types: awareness of diet-disease relationships, knowledge of nutrition principles (i.e., cholesterol is found in animal

foods), and how-to knowledge or the concrete knowledge and skills that guide day-to-day implementation of a desired behavior, such as eating healthy (Guthrie et al., 1999). In regards to the first category, American people display fairly high levels of awareness of the relationship between their diets and serious chronic diseases (International Food Information Council Foundation, 2017a). This is significant because when people have awareness of how their lifestyle habits affect their health, they will have legitimate reasons to motivate themselves to improve poor dietary habits. Since the public has already grasped that there is a link between diet and disease, education efforts can be focused away from this concept and more so into nutrition principles and knowledge that guides day-to-day healthy eating. Yet, to determine what specific education is needed on these topics, it must first be determined what people know and do not know so that proper education can be created.

The International Food Information Council Foundation's 2017 Food and Health Survey is a valuable tool to help determine the status of the public's knowledge on current nutrition principles. This survey analyzed the opinions of 1,002 Americans, ages 18-80, on their beliefs and behaviors as they relate to food (International Food Information Council Foundation, 2017a). Positive results from the survey were that most people correctly identified that both fresh foods and frozen foods were healthier than canned foods and that most people noted that in the past year that they were engaging in behaviors to improve their health such as drinking more water and eating more fruits and veggies (International Food Information Council Foundation, 2017a). Americans also brought to light their reasons for wanting to eat healthier were weight loss, protection of long-term health, and increased energy (International Food Information Council Foundation, 2017a).

It is clear that Americans want health benefits from food, yet many report that they struggle to understand which foods are associated with specific benefits (International Food Information Council Foundation, 2017a). In fact, 45% of those desiring to consume healthy food and beverages could not identify a single food or nutrient associated with weight loss, cardiovascular health, energy, and digestive health (International Food Information Council Foundation, 2017b). Additionally, while sources of omega-3 fatty acids such as fish oil contribute to heart health, only 12% of people could accurately make this association (International Food Information Council Foundation, 2017b). Not surprisingly, many communicated in the survey that they doubted their food choices (International Food Information Council Foundation, 2017a). Uncertainty behind food choices is understandable in today's day and age, as there is a lot of conflicting information about healthy diets. For example, if one asked a doctor, google, a dietician, and a friend if eggs are good or bad for their health, it is likely that they would be met with many different answers. Due to the conflicting information available, 56% of people say that they doubt their food choices in regards to what foods they should eat and what foods they should avoid (International Food Information Council Foundation, 2017b). These statistics suggest that Americans have the initiative to eat healthy but are in dire need of further education on nutrition principles and how-to knowledge that would allow them to do so.

### **Interactive Cooking Schools**

From this assessment of the American public's current knowledge on dietary principles, it can be concluded that an educational program that teaches nutritional knowledge and how to incorporate it into everyday life choices is desperately needed; for knowledge creates the precondition for change (Bandura, 1998). Though there are currently many educational programs that have emerged to instruct people on how to eat healthy, one noteworthy cooking school is

Kitchen Creations (KC): A Cooking School for People with Diabetes and Their Families. The purpose of KC is to instill knowledge in participants that enhances their ability to meal plan and advances their food preparation skills so that they learn to appropriately self-manage their dietary habits (New Mexico Department of Health Diabetes Prevention and Control Program & New Mexico State University, n.d.). This program is effective because it promotes a collective learning environment by employing tenets of the social cognitive theory (SCT). This learning style encourages participants to socially engage in nutrition education activities, food preparation activities, and the tasting of foods (New Mexico Department of Health Diabetes Prevention and Control Program & New Mexico State University, n.d.). Archuleta, VanLeeuwen, Halderson, Wells, & Bock (2012) studied the effectiveness of this innovative cooking school in changing nutrient intake patterns of people with type 2 diabetes, with particular focus on intake of fat, cholesterol, sodium, and carbohydrates (nutrients of concern for diabetics). They also assessed whether gender, ethnicity, age, and income have a differential impact on any nutrient intake changes (Archuleta et al., 2012).

This study used a quasi-experimental design with pretest/posttest comparisons to determine outcomes (Archuleta et al., 2012). They engaged 117 participants with T2D in KC (Archuleta et al., 2012). Participants partook in a series of hands-on cooking classes with their family members, in which they learned to prepare and eat a meal together (Archuleta, et al., 2012). Archuleta, et al. (2012) gathered data for evaluation by administering three-day food records to participants, one month before and one a month after the cooking class intervention. These records were used to measure changes in energy intake and selected nutrients. The authors reported that statistically significant decreases ( $p < .05$ ) were observed for the following nutrient intakes and dietary variables: energy, total fat, saturated fat, carbohydrates, cholesterol, sodium,

and percentage of calories from fat in the diet (Archuleta et al., 2012). A statistically significant increase ( $p = .02$ ) was observed for the percentage of calories from protein in the diet (Archuleta et al., 2012). No significant associations were detected between nutrient intake changes and age, gender, or ethnicity. However, cholesterol intake, sodium consumption, and income were found to be associated. The lowest income group exhibited a substantial decrease ( $p = .001$ ) in cholesterol intake, whereas the other income groups displayed no association. Sodium consumption was greatly reduced ( $p = .006$ ) in the highest income group but not in other income groups (Archuleta et al., 2012). Overall, this study indicates that KC's social cooking school attained positive and successful outcomes. Still, more studies are needed to further support validity and accuracy of this program.

Healthy Teaching Kitchen (HTK) is a program similar to Kitchen Creations, yet they measure more tangible results such as blood pressure and hemoglobin A1C, a test that reflects the average blood glucose level from the past two to three months (CDC, 2021a). HTK is an interactive class aimed at constructing healthy behaviors through learning important nutrition concepts and healthy eating skills such as meal planning, grocery shopping, label reading, safe food handling, and basic nutrition guidelines (Byrne et al., 2017). To gauge the value of this program, Byrne et al. (2017) examined the relationship between HTK attendance and clinical outcomes as measured by hemoglobin A1C and blood pressure. This relationship was evaluated through a retrospective chart review, where data was collected from 155 participants with T2D who were part of the Diabetes Self-Management Support (DSMS) HTK program at the Louis Stokes Cleveland VA Medical Center between February 2013 and May 2016. Results indicated a significant reduction ( $p < .0001$ ) in hemoglobin A1C in those who engaged in the HTK Diabetes self-management education core curriculum. There was no significant relationship exhibited

between systolic or diastolic blood pressure and class attendance. Despite lack of improvements on blood pressure, reductions were seen in hemoglobin A1C. Therefore, interactive cooking classes have demonstrated that participating in healthy eating behaviors truly is an effective way to improve glycemic control and manage T2D (Byrne et al., 2017).

Another program that operates using similar principles to Kitchen Creations and Healthy Teaching Kitchen is Jamie's Food Ministry. In addition to promoting cooking skills, they also focus on enhancing cooking confidence or self-efficacy, which is an individual's belief that they have the ability to achieve their goals (Flego et al., 2014). Cooking confidence is an important component of this cooking school because it helps participants achieve initial and long-term change in dietary behaviors. Flego et al. (2014) evaluated this program with their primary goals being to study the immediate impacts and long-term outcomes in regards to cooking confidence or self-efficacy. They additionally assessed impacts on cooking and eating behaviors. A mixed methods quasi-experimental, repeated measures design was utilized to compare survey responses of a control group of 1291 participants against an experimental group of 386 participants. Surveys were administered before the cooking school, immediately following the cooking school, and 6 months after the cooking school. From this data, they concluded that there was a statistically significant increase ( $p < .001$ ) in all cooking confidence measures, self-reported daily vegetable intake, cooking main meals from basic ingredients, and daily fruit intake (Flego et al., 2014). These statistically significant increases were sustained at 6 months post cooking school. Therefore, this cooking class acts as another model that supports that cooking interventions improve healthy eating behaviors. This program is also of particular value because it successfully enhanced nutritional knowledge and cooking confidence (self-efficacy). Advancing knowledge

and cooking confidence are important precursors to the engagement and sustainment of healthy eating behaviors.

Since cooking schools are still considered a new approach to managing diabetes and improving health outcomes, there is limited research on long term relationships between cooking and health. However, a Danish study by Jandorf et al. published in 2015 aimed to explore the impact of involvement in cooking on long-term morbidity and mortality among patients newly diagnosed with type 2 diabetes. In this study, data was used from the Diabetes Care in General Practice study, which was a cluster-randomized, controlled trial with patient data from 474 different general practitioners (Jandorf et al., 2015). Of these patients, baseline questionnaires were administered to 1,381 participants who were newly diagnosed with T2D, but only 1,235 were included in data analysis (Jandorf et al., 2015). The questionnaire addressed information regarding how frequently participants consumed a warm main meal and how often they cooked it themselves (Jandorf et al., 2015). These selected patients were then followed for 19 years in the Danish National Patient Registry and the Danish Register of Causes of Death (Jandorf et al., 2015). Findings showed that women who cooked for themselves less than once a week had a higher risk of diabetes-related deaths ( $p = .039$ ) and stroke ( $p = .033$ ) (Jandorf et al., 2015). However, for men, infrequent cooking was not related to increased risk for the outcomes investigated (Jandorf et al., 2015). Therefore, this study shows that it is important to possess cooking skills and use them frequently over the course of one's life, especially for women. This reinforces that cooking schools are essential interventions in today's society as they help prevent, manage, and treat chronic disease. The purpose of this DNP project was to determine if participation in cooking classes enhanced self-efficacy as it pertains to healthy nutritional intake patterns in adults with type 2 diabetes.

## **Social Cognitive Theory: Theoretical Framework**

Healthy Teaching Kitchen, Jamie's Ministry of Food, and Kitchen Creations display a common theme of creating an interactive environment for participants to learn. The effectiveness of this social environment is not coincidental but is rooted in scientific theory, the social cognitive theory (SCT) by Albert Bandura, which proposes that much of human learning occurs in a social context (Boston University School of Public Health, 2018). This theory also operates under the premise that personal, behavioral, and environmental factors are important in influencing behavior change (Boston University School of Public Health, 2018). To better understand the complexity of this theory and how it can enhance learning, the five main principles will be discussed: reciprocal determinism, behavioral capability, observational learning, reinforcements, expectations, and self-efficacy (Boston University School of Public Health, 2018). The goal is to use each of these principles to advance learning and shape healthy behaviors during cooking classes.

Principle one, behavioral capability, refers to a person's ability to perform a behavior with their knowledge and skills (Boston University School of Public Health, 2018). To successfully perform a behavior, a person must know what to do and how to do it (Boston University School of Public Health, 2018). In this project, participants' knowledge and skills about healthy eating were advanced through PowerPoint presentations, clear directions, and live cooking instruction via Zoom. These methods ultimately showed participants how to cook healthy which allows them to eat healthy. Principle two, observational learning, encompasses people observing a behavior conducted by others and then reproducing those actions (Boston University School of Public Health, 2018). This principle was also applied in the project through the live portion of cooking classes. Participants watched the head researcher successfully cook a recipe, while they

simultaneously cooked that same recipe. Principle three, reinforcements, involves internal or external forces that affect the likelihood of continuing or discontinuing a certain behavior (Boston University School of Public Health, 2018). Reinforcements were offered by positive feedback from both the head researcher and other classmates. Additionally, participation was rewarded with free meals and the eligibility to win a grocery gift card. Principle four, expectations, refers to the anticipated consequences of a person's behavior (Boston University School of Public Health, 2018). Since anticipated consequences are derived from past experiences, mainly experiences that occurred before this project started, the project did not encompass this construct to improve learning. Lastly, the final principle of the SCT is self-efficacy (Boston University School of Public Health, 2018). This principle will be discussed in great depth as this variable will be thoroughly analyzed to evaluate the effectiveness of the cooking class.

### **Social Cognitive Theory: Improving Self-efficacy**

Self-efficacy refers to the level of a person's confidence in his or her ability to successfully perform a behavior (Boston University School of Public Health, 2018). Self-efficacy is influenced by a person's specific capabilities and by environmental factors (Boston University School of Public Health, 2018). Self-efficacy can be impacted by four main sources: mastery of experiences, vicarious experiences, social persuasion, and somatic and emotional states (Bandura, 1998). The most effective way to create a strong sense of efficacy is through mastery experiences (Bandura, 1998). Successes build self-confidence, and failures undermine it (Bandura, 1998). Yet when people experience only easy successes, they come to expect quick results and are easily discouraged by failure (Bandura, 1998). Thus, a resilient sense of self-efficacy is then built through the perfect concoction of obstacles that can be overcome by

perseverant effort. Everyday dietary choices are complex and multifactorial, creating a fair share of obstacles. For instance, one had a bad day at work and gets out late and while driving home they pass fast food restaurants, which offer a meal high in carbohydrates and fats that appeal to both emotional cravings and the convenience of a meal ready within minutes. These scenarios happen every day. Participants of CCB were given tools to overcome these everyday health challenges. The cooking class encouraged participants to make extra helpings of meals in order to yield leftovers so that multiple, healthy meals were readily available during the week. It also taught people how processed carbohydrates and fats negatively affect the body. Knowing and utilizing this knowledge helped people choose healthy alternatives to processed carbohydrates and fats in their daily diets. The more people put their knowledge and skills from the class to the into practice, the more successes they would have, which would boost their beliefs that they are capable of eating healthy.

Self-efficacy can also be strengthened when individuals engage in vicarious experiences of social models (Bandura, 1998). Bandura (1998) states that by, “seeing people similar to oneself succeed by sustained effort raises observers' beliefs that they too possess the capabilities to master comparable tasks and succeed” (p. 3-4). The head researcher served as a strong social model in order to positively mentor cooking class participants. The head researcher displayed competence of nutrition concepts and confidence while cooking. The head researcher demonstrated to the participants the creation of multiple healthy recipes which will inspire the participants to believe that they too can create these recipes.

Social persuasion is yet another way to improve self-efficacy (Bandura, 1998). People who are verbally encouraged have decreased self-doubt and are more likely to mobilize greater efforts and sustain them (Bandura, 1998). Cooking classes took place in a supportive

environment where the instructor encouraged participants to share insight on their personal health journeys. Participants were also encouraged to cheer each other on and respectfully acknowledge each other's successes.

Lastly, somatic and emotional states play a key role in determining an individual's self-efficacy (Bandura, 1998). When one experiences a physiological stress reaction, anxiety and doubt of capabilities can occur (Bandura, 1998). Mood also affects self-efficacy (Bandura, 1998). Positive mood enhances perceived self-efficacy, whereas despondent moods diminish it (Bandura, 1998). Participants were educated on the effect of physiological responses and mood on self-efficacy and thus were able to focus on promoting and maintaining a positive mood in class.

This DNP project utilized the principles of SCT to build an interactive cooking class that provides a positive, nourishing environment for an individual to learn, grow, and change their cooking and eating habits. This project also took actions to specifically increase self-efficacy as it pertains to healthy nutritional intake patterns. CCB improves self-efficacy by providing a strong social model to guide participants, allowing them to trial their true abilities to cook and eat healthy in class, educating them on unhealthy foods and their negative effects so that they are less likely to eat them, and providing positive reinforcements for healthy behaviors. Facilitating participants to improve self-efficacy is important, because individuals with high self-efficacy will set higher goals, put forth more effort towards them, and persevere in the face of difficulties and setback (Bandura, 1998). Self-efficacy is also important because "people's beliefs about their abilities have a profound effect on those abilities" (Bandura, as cited in Lopez-Garrido, 2020).

## **Chapter Three**

### **Introduction**

Research has shown that eating a healthy diet can be a potent protector against type 2 diabetes (Devries et al., 2014). Though the idea of eating healthy seems easily achievable, many individuals find that it can be difficult to execute regularly. To eat a healthy diet, people must have knowledge about nutrition principles along with cooking skills to prepare meals. Yet, many Americans reported that they were lacking in competence when it comes to these things (International Food Information Council Foundation, 2017a). Cooking classes provide a way to educate Americans on necessary nutrition principles and cooking skills. After evaluating top cooking schools such as KC, HTK, and Jamie's Ministry of Food, the most desirable elements were taken from each program and were combined into one program to form Codi's Cooking Basics (CCB). CCB is a cooking school for adults with type 2 diabetes in Michigan, USA. CCB used the social cognitive theory and its principle of self-efficacy to enhance learning of nutrition principles and healthy cooking and eating behaviors, in the hopes that in the future these behaviors would be implemented regularly by participants. The purpose of this DNP project was to determine if participation in cooking classes enhanced self-efficacy as it pertains to healthy nutritional intake patterns in adults with type 2 diabetes.

### **Sample and Setting**

To obtain subjects for CCB, convenience sampling techniques were utilized. Potential participants were notified about the class by word of mouth or by promotional flyers (Appendix A). The flyers were disseminated on social media (mainly via Facebook on the researcher's personal account) and throughout the local community of the researcher. Eligible participants for

the program were 18 years old or older, were diagnosed with type 2 diabetes by a healthcare provider, had access to the internet, and were residents of Michigan. A minimum of 10 participants were needed in order to conduct this study per the university's Doctor of Nursing Practice project requirements.

The ideal sample size for this study was 384 participants, based on calculations by a sample size calculator (Creative Research Systems, 2012). This output was generated using the population of Michigan residents with type 2 Diabetes, which according to the Michigan Department of Health and Human Services (2022) is 1,000,000, a confidence level of 95%, and a margin of error of five percent. Due to time constraints and limited funding and resources, it was decided that CCB would begin after the enrollment of 11 individuals. It should be noted that because the actual sample size is well below the ideal calculated sample size, results of this study will not bear adequate power. Because of the small number of participants, great efforts were taken to retain participants. For example, full completion of the program made participants eligible for the drawing of two gift certificates to the local grocery store of their choice; one certificate worth \$75 and the other worth \$50. Participants also received incentives of three free meals and the opportunity to advance their cooking skills from their participation efforts.

### **IRB Approval**

Institutional Review Board (IRB) approval was obtained from the university since the project contained human subjects (Appendix B). As an IRB requirement, informed consent forms were sent to all participants via email and had to be completed by each subject before they could access the CCB program (Appendix C). These consent forms were important for participants to have because they extensively divulged the purpose of the project, along with its requirements

and benefits and risks. Benefits of the study were that participants advanced their cooking knowledge and skills through an interactive approach, improved self-efficacy that pertains to healthy nutritional intake patterns, and engaged and connected with peers of similar demographics. There were no known risks of the study to participants. Yet, participants were required to forfeit a few hours of their time to the program for shopping and class attendance. The informed consent also disclosed that participants have the right to drop out of this study at any time.

When participants agreed to take part in this study, they were informed that all measures to ensure confidentiality would be taken within reason, as all personal data was coded with an encryption tool in order to protect subjects. All identifiers were removed and identifying information was stored separately from research data. All electronic data was stored on password-protected, encrypted computers and all paper data in a locked filing cabinet in a locked office. Only the head researcher and project chair were granted access to this data. Data will be stored for three years past completion of study and then will be destroyed. Despite these security measures, participants were informed that there is still a risk that data could potentially be hacked or compromised.

### **Design, Procedures, and Measures**

The study on CCB featured a quasi-experimental design. The study measured if self-efficacy as it pertains to healthy nutritional intake patterns in people with type 2 diabetes improves after the intervention of a cooking class is administered. To determine CCB's effect on self-efficacy, participants completed a questionnaire evaluating pre-class self-efficacy (Appendix D), took part in CCB program, and then completed the same questionnaire to evaluate post-class

self-efficacy. Participants were required to fill out a CCB questionnaire (Appendix D) via Qualtrics, an online survey creation, dissemination, and analysis tool. Items on the questionnaire were numbered Q1-Q12. The questionnaire began with questions Q1-Q5, these questions asked about participant's demographics which included information about gender, income, age, education, and race.

The questionnaire ends with Q6-Q12, these questions intended to measure self-efficacy as it pertains to healthy nutritional intake patterns (Appendix D). Specifically, these questions aimed to assess confidence levels as they pertain to the following concepts: (Q6) ability to consume recommended daily fruit intake, (Q7) knowledge of recommended daily vegetable intake, (Q8) knowledge of the three major carbohydrate (CHO) groups, (Q9) knowledge of how simple and complex CHOs affect blood glucose levels, (Q10) knowledge of good fiber source, (Q11) knowledge of who creates websites ending in .com, and (Q12) ability to use a health app to make healthy food choices.

Q6 and Q7 of the CCB questionnaire were inspired by the questionnaire used by Jamie's Ministry of Food program, which was adopted from Barton, Wrieden, and Anderson (2011) and Keller, Gibbs, Wong, Vanderkooy, and Hedley (2004). The primary researcher of CCB did reach out to Anna Flego, the head researcher in the study of Jamie's Ministry of Food, via email for permission to modify Jamie's Ministry of Food questionnaire (Appendix E). After reviewing the full CCB questionnaire, Flego stated that the questionnaire used in Jamie's Ministry of Food study and the questionnaire used in CCB were ultimately different in nature and therefore permission was not needed in order to modify the CCB questionnaire. However, Flego requested that credit should be given to Jamie's Ministry of Food program for inspiring the CCB questionnaire. Q8-Q12 were developed by the head researcher so the specific content of the

program could be measured for differences in self-efficacy before and after the class.

Considering CCB's questionnaire is then independently adapted, it was not tested for reliability and validity.

After this initial questionnaire was completed, participants engaged in CCB classes. Recipes for the classes were sent out on Mondays of each week that the classes were held. This gave participants time to shop for the recipe's ingredients before class. The head researcher would estimate the cost of the recipe, a check was then sent out to reimburse participants for the cost of the ingredients. The classes were held on Wednesday evenings of every week for a total of three weeks. Classes were broadcast on Zoom and were approximately two hours in length. Classes started with a fifteen-to-thirty-minute PowerPoint created and presented by the head researcher. Major presentation topics covered in the classes included macronutrients effects on the body, especially carbohydrates (Appendix F), analysis of food labels (Appendix G), benefits of fruits and vegetables (Appendix G), online health literacy (Appendix H), and Fooducate (Appendix H), which is a free nutrition tracker app that additionally offers food label analysis, diet tips, and recipes. Fooducate is renowned as a former US Surgeon General's Healthy App challenge winner (Edwards, 2012).

Following the presentations, the head researcher and participants cooked a recipe that correlated with the content previously covered in the class. To facilitate live cooking instruction via Zoom, the head researcher would demonstrate cooking a recipe on screen while the class watched the instruction and cooked simultaneously. All recipes were taken from Diabetes Food Hub, an American Diabetes Association resource (Diabetes Food Hub, n.d.). Week one's class made Southwestern Protein Powered Bowls (Appendix I), which featured healthy macronutrients and many complex CHOs (Diabetes Food Hub, n.d.). Week two's class demonstrated how to

make Low Carb Veggie Fried Rice Bowls (Appendix J), in which food labels were analyzed and many healthy vegetables were incorporated (Diabetes Food Hub, 2021). Week three's cooking class made Spaghetti (squash) and Meatballs (Appendix K) (Diabetes Food Hub, n.d.). While cooking this recipe, participants input the recipe's ingredients into the Fooducate app to learn how the app works and what benefits it offers.

Subjects were required to watch all three classes, either live or recorded, to be included in data collection. To enhance social interactions, especially for those that did not attend live classes, discussion boards via Boardhost were utilized. The discussion board was a forum where the participants could pose questions and comments outside of class times that the head researcher and other classmates could respond to. The discussion board was monitored every 2-3 days by the head researcher to promote fluid discussion. Email threads were used by the head researcher to disseminate class specific information to participants such as class related announcements and Zoom links.

The goal of the classes remained to teach a lesson that improved knowledge of nutritional principles and their application, all while building increased self-efficacy. To measure this, following completion of the third and final cooking class, an exit questionnaire was administered in Qualtrics. This post-class questionnaire asked questions that were identical to the pre-class questionnaire (Appendix D). Thus, the participants served as their own controls. Overall, the duration of data collection spanned roughly one month, from the beginning November 2021 to the beginning of December 2021. Data was analyzed on the demographics of the group. Frequencies and percentages were reported on gender, income, age, education, and race.

For each question, participants rated their degree of self-efficacy on a five-point Likert scale. Items were scored on a scale of one through five. One point is “not at all confident”. Two points equals “slightly confident”. Three points equates to “somewhat confident”. Four points indicates “fairly confident”, and five points is “completely confident”. The higher the number reported, the higher the participant’s confidence or self-efficacy level is for that category. The maximum group score of a single question is 55, as it indicates that all 11 participants selected five or “completely confident”. The group score for pre-class and post-class responses were reported for each question, Q6-Q12, to help show if an increase in scores occurred after the class.

The Wilcoxon Signed-Rank Test was then used to determine if a significant difference existed between pre-class and post-class responses to questions specific to self-efficacy as it pertains to healthy nutritional intake patterns, including: (Q6) ability to consume recommended daily fruit intake, (Q7) knowledge of recommended daily vegetable intake, (Q8) knowledge of the three major carbohydrate (CHO) groups, (Q9) knowledge of how simple and complex CHOs affect blood glucose levels, (Q10) knowledge of good fiber source, (Q11) knowledge of who creates websites ending in .com, and (Q12) ability to use a health app to make healthy food choices. All statistics were generated using SPSS.

## Chapter Four

Type 2 Diabetes affects roughly 30 million Americans and its effects can be devastating (CDC, 2021b). It can result in blindness, kidney failure, heart attack, stroke, and lower limb amputation, which ultimately can lead to decreased quality of life and death (World Health Organization, 2018). Fortunately, T2D can be a preventable and treatable disease when people consistently eat healthy diets (Harvard Health Publishing, 2018). Many individuals want to eat healthy, but struggle when it comes to doing so consistently. Therefore, Codi's Cooking Basics (CCB) was created. CCB used the social cognitive theory and its principle of self-efficacy to improve participants' knowledge of nutrition concepts and healthy cooking and eating behaviors, in the hopes that in the future these behaviors would be implemented regularly by participants. The purpose of this DNP project was to determine if participation in cooking classes enhanced self-efficacy as it pertains to healthy nutritional intake patterns in adults with type 2 diabetes.

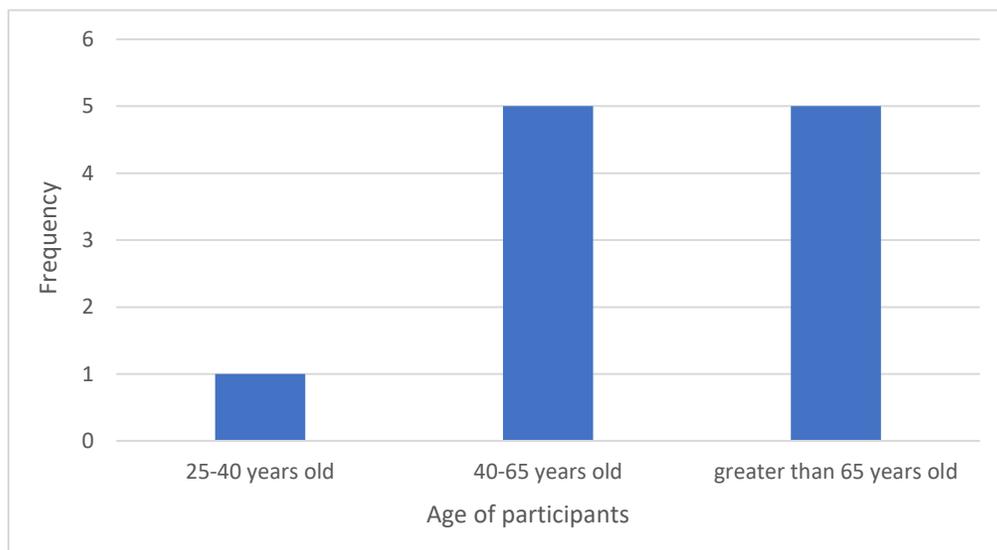
Statistical analyses using Wilcoxon Signed-Rank Test was employed to assess for significant differences in pre-class/post-class self-efficacy of multiple categories, mainly: (Q6) ability to consume recommended daily fruit intake, (Q7) knowledge of recommended daily vegetable intake, (Q8) knowledge of the three major carbohydrate (CHO) groups, (Q9) knowledge of how simple and complex CHOs affect blood glucose levels, (Q10) knowledge of good fiber source, (Q11) knowledge of who creates websites ending in .com, and (Q12) ability to use an app to make healthy food choices. A group score was also provided to help quantify the differences in pre-class and post-class responses. It is important to note that the group score provide useful information on the distribution, but do not display statistical significance.

## Demographic information

The study contained 11 participants ( $n = 11$ ). No participants dropped out or were disqualified for data collection. Data was obtained through a pre-class and a post-class questionnaire via Qualtrics. All answers were self-reported. Demographic data collected included gender, income, age, education, and race. Of the participants, 27.3% ( $n = 3$ ) were male and the remaining 72.7% ( $n = 8$ ) were female. After analyzing participants' income, it was found that all participants made under 100,000 dollars annually, no participants reported making 100,000 to 150,000 dollars or more than 150,000 annually. Of the participants, 63.6% ( $n = 7$ ) made less than 50,000 dollars annually. When age of participants was evaluated, a noteworthy finding regarding age is that the majority of participants reported that they were 40 years or older. In fact, those 40 years or older represented 91% ( $n = 10$ ) of the sample, as shown in Figure 1.

**Figure 1**

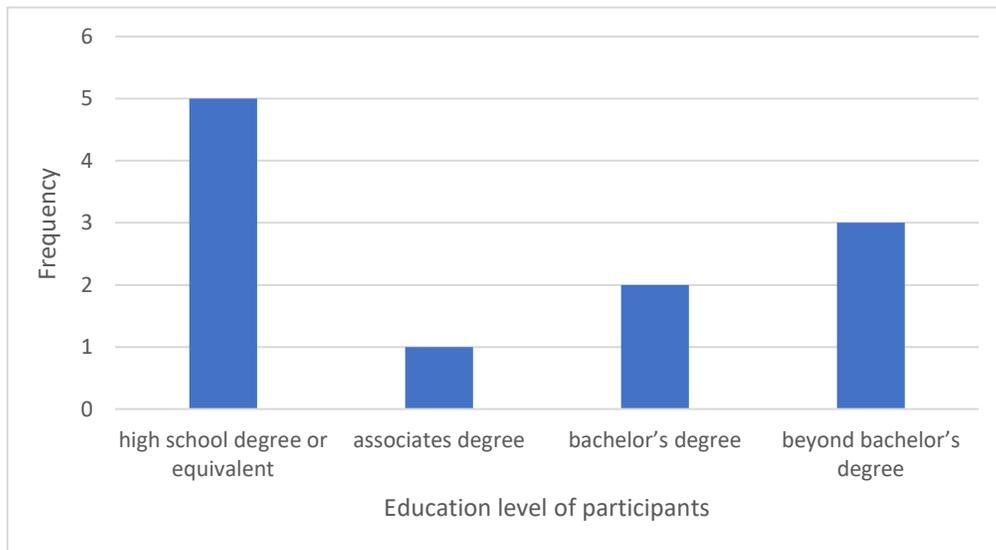
*Age of participants*



In regards to educational attainment, roughly half of the population ( $n = 5$ ) reported that the highest level of education that they achieved was a high school degree or equivalent. The other half ( $n = 6$ ) reported that they obtained an associate's degree or higher. A further breakdown of education level is displayed in Figure 2. Race was also evaluated. 100% of participants in this study reported that they were Caucasian or White.

**Figure 2**

*Education level of participants*



### **Inferential Statistics**

Inferential statistical testing was used to detect differences in reported self-efficacy before and after participation in CCB cooking classes. Specifically, a Wilcoxon Signed-Rank Test was utilized to assess differences in confidence levels as they pertain to the following concepts: (Q6) ability to consume recommended daily fruit intake, (Q7) knowledge of recommended daily vegetable intake, (Q8) knowledge of the three major carbohydrate (CHO) groups, (Q9) knowledge of how simple and complex CHOs affect blood glucose levels, (Q10)

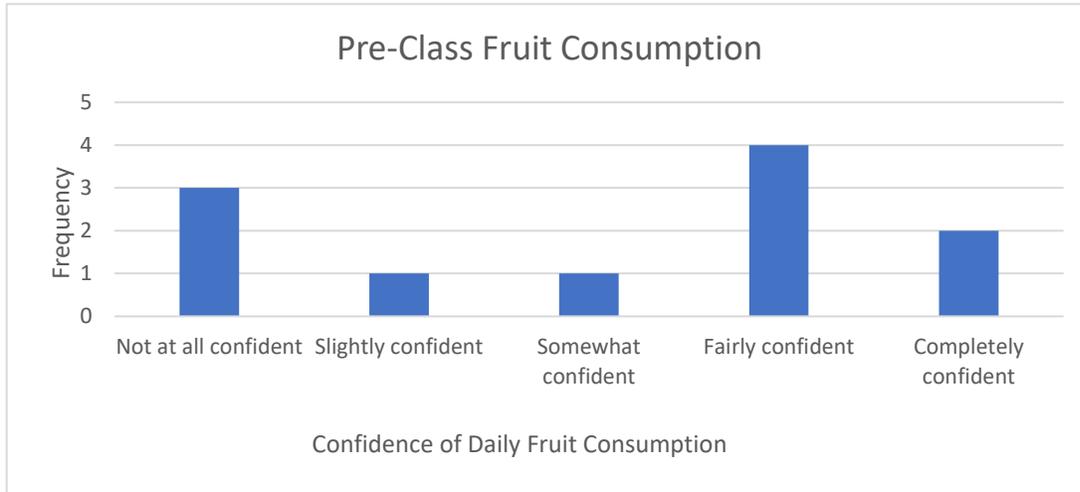
knowledge of good fiber source, (Q11) knowledge of who creates websites ending in .com, and (Q12) ability to use a health app to make healthy food choices. A group score was also provided below to help visualize the differences in pre-class and post-class responses.

For each category, participants rated their degree of self-efficacy on a 5-point Likert scale. Items were scored on a scale of 1-5. One point is “not at all confident”. Two points equals “slightly confident”. Three points equates to “somewhat confident”. Four points indicates “fairly confident”, and 5 points is “completely confident”. The higher the number reported, the higher the participant’s confidence or self-efficacy level is for that category. In terms of a group score, the maximum score of a single question is 55, as it indicates that all 11 participants selected 5 or “completely confident”. Again, the group scores help to quantify differences in pre-class and post-class responses, but the information it provides does not display statistical significance.

When it comes to participant’s confidence in their ability to consume recommended daily fruit intake, the group score of pre-class confidence equaled 34, whereas the group score of post-class confidence improved to 44. To see the exact data distributions for pre-class and post-class responses, see Figures 3 and 4. To further evaluate if there was a significant difference in paired responses, a Wilcoxon Signed-Rank Test was conducted. The Wilcoxon Signed-Rank Test revealed that there was a significant increase in a participant’s confidence in their ability to consume recommended daily fruit intake (Table 1),  $z = -2.041$ ,  $n = 11$ ,  $p < .05$ , with a medium effect size ( $r = .44$ ). The median score on the CCB questionnaire did not change from pre-program ( $Md = 4$ ) to post-program ( $Md = 4$ ).

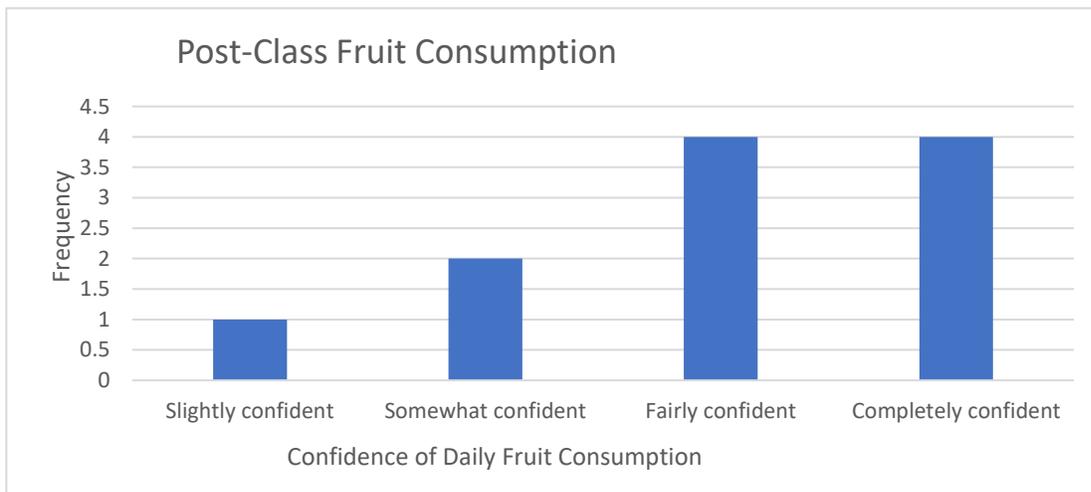
**Figure 3**

*Pre-class fruit consumption*



**Figure 4**

*Post-class fruit consumption*



Regarding participant's confidence in their knowledge of recommended daily vegetable intake, group scores for pre-class confidence equaled 31, compared to group scores for post-class confidence which were 50. To evaluate if this difference was significant between pre-class and post-class responses for individuals, a Wilcoxon Signed-Rank Test was conducted. The Wilcoxon Signed-Rank Test revealed that there was a significant increase in a participant's confidence in their knowledge of recommended daily vegetable intake (Table 1),  $z = -2.859$ ,  $n = 11$ ,  $p < 0.05$ , with a large effect size ( $r = .61$ ). The median score on the CCB questionnaire increased from pre-program ( $Md = 3$ ) to post-program ( $Md = 5$ ).

Another category that the CCB class measured self-efficacy in was knowledge of the three major carbohydrate (CHO) groups. Pre-class group scores totaled 27 and post class group scores totaled 51. Notably in the pre-class, nearly half of participants ( $n = 5$ ) reported that they were "not confident at all" when it comes to their knowledge of the three major carbohydrate (CHO) groups. However, after the class was administered, all participants answered that they were "fairly confident" ( $n = 5$ ) or "completely confident" ( $n = 6$ ) in their knowledge of the three CHO groups. Therefore, it is not surprising that the Wilcoxon Signed-Rank Test revealed that there was a significant increase in a participant's confidence in their knowledge of the three major CHO groups after CCB (Table 1),  $z = -2.668$ ,  $n = 11$ ,  $p < .05$ , with a large effect size ( $r = .57$ ). The median score on the CCB questionnaire increased from pre-program ( $Md = 2$ ) to post-program ( $Md = 5$ ).

When it comes to participant's confidence in their knowledge of how simple and complex CHOs affect blood glucose levels, total pre-class group scores equaled 33, whereas total post-class group scores were 50. The Wilcoxon Signed-Rank Test revealed a significant increase in participant's confidence of their knowledge in how simple and complex CHOs affect blood

glucose levels after CCB (Table 1),  $z = -2.701$ ,  $n = 11$ ,  $p < .05$ , with a large effect size ( $r = .58$ ). The median score on the CCB questionnaire increased from pre-program ( $Md = 3$ ) to post-program ( $Md = 5$ ).

In regards to assessing differences in participant's confidence in their knowledge of good fiber source pre-class and post-class, total pre-class group scores were 43 and total post-class group scores were 53. When comparing pre-class and post-class data, what stood out was that 36.4% ( $n = 4$ ) of participants responded that they were either "somewhat confident" ( $n = 2$ ) or "slightly confident" ( $n = 2$ ) in their knowledge of a good fiber source before the class. Markedly, after the class 81.8% ( $n = 9$ ) of participants responded that they were "completely confident" in their knowledge of a good fiber source. After running a Wilcoxon Signed-Rank Test for this category, it was revealed that a significant increase was observed in participant's confidence in their knowledge of a good fiber source after CCB (Table 1),  $z = -2.232$ ,  $n = 11$ ,  $p < .05$ , with a medium effect size ( $r = .48$ ). The median score on the CCB questionnaire increased from pre-program ( $Md = 4$ ) to post-program ( $Md = 5$ ).

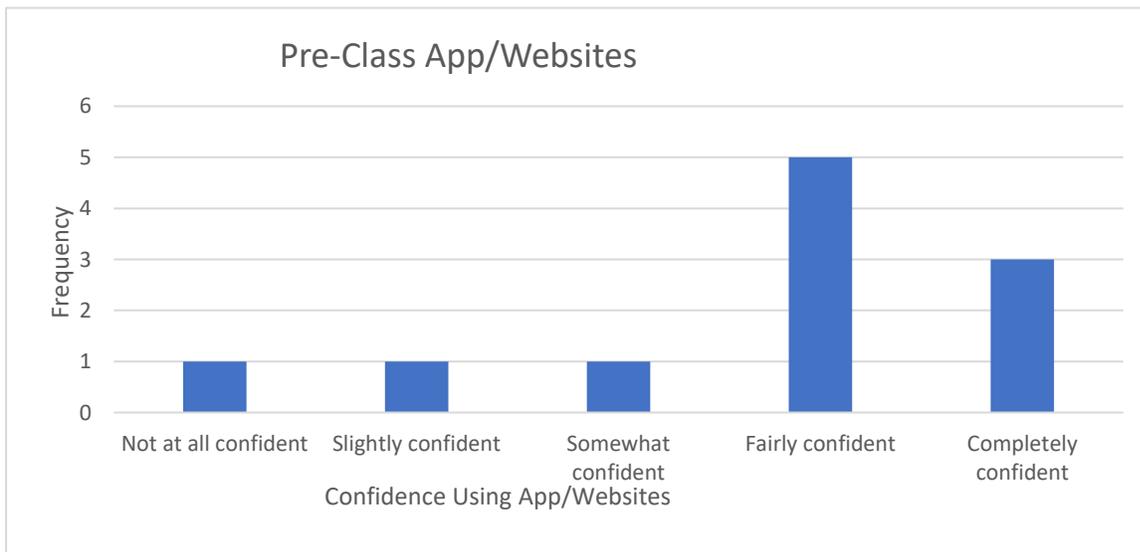
When it comes to participant's confidence in their knowledge of who creates websites ending in .com, total pre-class group scores equaled 26, whereas total post-class group scores were 49. In the pre-class responses, 54.5% ( $n = 6$ ) of participants reported that they were "not at all confident" in their knowledge of who creates websites ending in .com. However, after the class all participants reported that they were at least "somewhat confident" in their knowledge of who creates websites ending in .com and 63.6% ( $n = 7$ ) were "completely confident" in their knowledge of who creates websites ending in .com. The Wilcoxon Signed-Rank Test revealed that there was a significant increase in a participant's confidence in their knowledge of who creates websites ending in .com after CCB (Table 1),  $z = -2.687$ ,  $n = 11$ ,  $p < .05$ , with a large

effect size ( $r = .57$ ). The median score on the CCB questionnaire increased from pre-program ( $Md = 1$ ) to post-program ( $Md = 5$ ).

Lastly, participants' confidence in the ability to use a health app to make healthy food choices was analyzed. In this category, total pre-class group scores were 41 and total post-class group scores were 49. In both pre-class and post-class responses the majority of participants responded that they were “fairly or completely confident” in their ability to use a health app. To view the exact data distributions for pre-class and post-class responses, see Figures 5 and 6. A Wilcoxon Signed-Rank Test revealed that there was not a significant increase in participants' confidence in the ability to use a health app to make healthy food choices before and after CCB (Table 1),  $z = -1.466$ ,  $n = 11$ ,  $p < .05$ , with a medium effect size ( $r = .31$ ). The median score on the CCB questionnaire increased from pre-program ( $Md = 4$ ) to post-program ( $Md = 5$ ). Test statistics from each category can be found in Table 1.

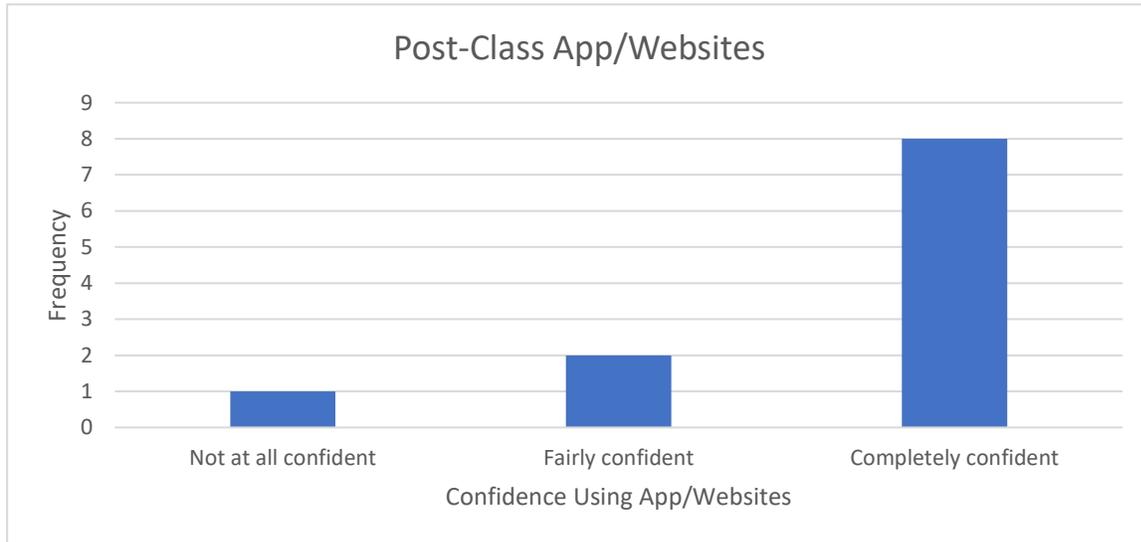
**Figure 5**

*Pre-class App/Website*



**Figure 6**

*Post-class App/Website*



**Table 1**

*Test statistics for all categories*

	Pre Fruit Consumption -Post Fruit Consumption	Pre Vegetable Serving Size -Post Vegetable Serving Size	Pre Major CHO Groups -Post Major CHO Groups	Pre CHO Differences in Body -Post CHO Differences in Body	Pre Fiber Sources -Post Fiber Sources	Pre Website Creator -Post Website Creator	Pre Using App/Website -Post Using App/Website
Z	-2.041 <sup>b</sup>	-2.859 <sup>b</sup>	-2.668 <sup>b</sup>	-2.701 <sup>b</sup>	-2.232 <sup>b</sup>	-2.687 <sup>b</sup>	-1.466 <sup>b</sup>
Asymp. Sig.	.041	.004	.008	.007	.026	.007	.143

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Though comments were not sought, a few anecdotal comments were received on the program. One participant wrote, “I have enjoyed cooking together with my friend and experiencing the new recipes. The recipes we made are quick, easy, and healthy. I appreciate the opportunity to learn those recipes and the site we learned from the ADA last week. The recipes allow themselves for adding spices and herbs you personally enjoy”. Another participant commented, “This class has been a great opportunity to spend some time with my granddaughter (who has helped with the cooking) and learn healthy food options as well. It was nice to try some new meals. We look forward to making some of these again!”.

## **Discussion**

After comparing differences in pre-class/post-class reported self-efficacy as it pertains to healthy nutritional intake patterns across seven categories in people with type 2 diabetes, it is important to note that in all categories except for using app/websites to make healthy food choices a significant difference was observed. Therefore, significant improvements in participant’s confidence in their ability to consume recommended daily fruit intake, knowledge of recommended daily vegetable intake, knowledge of the three major carbohydrate (CHO) groups, knowledge of how simple and complex CHOs affect blood glucose levels, knowledge of good fiber source, knowledge of who creates websites ending in .com occurred after the implementation of CCB classes. This is important because it shows that CCB has the capacity to build confidence in its participants' knowledge and abilities, which will allow them to engage in healthy cooking and eating habits, and potentially yield positive health benefits.

Other cooking schools have also shown that they have made a positive impact on on their participants' cooking and eating habits. In a study by Archuleta et al. (2012) on Kitchen Creations: A Cooking School for People with Diabetes and Their Families (KC), it was found

that after taking this class participants displayed a significant decrease in nutrient intakes and dietary variables: energy, total fat (grams), saturated fat (grams), carbohydrate (grams), cholesterol (mg), sodium (mg), and percentage of calories from fat in the diet. Healthy Teaching Kitchen (HTK) is another cooking class that has shown to greatly benefit its participants. After engaging in HTK, a study by Byrne et al. (2017) showed that participants experienced a significant reduction in hemoglobin A1C. Additionally, a study on Jamie's Ministry of Food, program in Australia showed that after taking the class, participants increased their reports of daily fruit and vegetable intake and cooking main meals from basic ingredients (Flego et al., 2014). Overall, cooking classes have shown great benefit for their participants' diets and health.

#### **Strengths/Limitations/Recommendations:**

Strengths of this project were that participants were able to advance their cooking knowledge and skills through an interactive approach cooking school, improve self-efficacy that pertains to healthy nutritional intake patterns, and engage and connect with peers of similar demographics. Gaining these experiences is important for participants as it gives them tools to improve their physical health and prevent or slow progression of disease. Additionally, a strength of this cooking school is that it can be used for in-person classes or in an online format. This program was initially intended for in-person use only but due to the onset of the COVID-19 pandemic, this program was converted to an online version to protect the researchers and participants from potential COVID-19 exposure.

Due to the online format of this program, participants were able to view classes from their own homes at their own convenience and reduce time and resources that they would normally use to get to in-person class, i.e. transportation time and costs. A handful of the participants that were over 65 years of age also commented that because of their age that they

were nervous about using technology for this class. However, these same participants noted that after actually going through the class they realized using technology was easier than they had thought. These participants consequently gained confidence in their ability to interact using technology. The online format was additionally beneficial because it allowed participants from different parts of the state of Michigan to easily partake in the class.

Limitations of this project were that convenience sampling techniques were used instead of random sampling techniques. Lack of random sampling could lead to unknown confounding variables affecting the results of the study. Furthermore, this project utilized a small sample size, therefore the power of the project is not adequate. Another limiting factor of this study is that it excluded those without access to a computerized device with internet. People with low income were likely the most affected by this factor. The sample itself also lacked racial diversity. Only those of white/Caucasian descent participated in this study. Therefore, conclusions from this study may be difficult to generalize across the population. A recommendation for future research on this topic would be to use a larger and more diverse sample size along with random sampling collection techniques. Another recommendation would be that future researchers include a place for comments in the post-class questionnaire to yield qualitative information regarding the benefits of cooking classes. Additionally, future researchers should implement the post-class survey again after six months or longer has elapsed to assess if improvements in self-efficacy were sustained. Of mention, future studies should also be employed on how cooking schools affect outcomes other than self-efficacy, as cooking schools could demonstrate a positive impact on daily consumption of healthy ingredients such as vegetables, the frequency that people cook at home, and hemoglobin A1C.

## Conclusion

The purpose of this DNP project was to determine if participation in cooking classes enhanced self-efficacy as it pertains to healthy nutritional intake patterns in adults with type 2 diabetes. After comparing differences in pre-class/post-class self-efficacy as it pertains to healthy nutritional intake patterns across seven categories, it is important to note that in all categories except the ability to use an app/websites to make healthy food choices, a significant improvement was observed after CCB. Considering these findings and the positive effects that KC, HTK, and Jamie's Ministry of Food had on their participants, cooking classes have been shown to successfully improve healthy cooking and eating habits. The capacity to modify these habits is of high importance because dietary factors are the single most significant risk factor for disease, disability, and premature death (Devries et al., 2014). Thus, diabetes and other chronic diseases can be substantially prevented or postponed through dietary modifications achievable through the cooking classes (US Burden of Disease Collaborators, 2013). Nurse practitioners and other healthcare professionals should then use this information to promote cooking classes to their patients with chronic diseases such as T2DM, instead of solely relying on medicinal regimens. Increased use of dietitians and nutritionists to provide instruction on healthy cooking/eating should also be employed by clinicians. It is time that we "let food be thy medicine" (Karpathiou, 2021).

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# Enroll in a Research Study



Getty Images (Marlyna) (2020). Photograph of healthy foods [digital image]. Retrieved from <https://www.womensday.com/health-fitness/advice/1271/lean-healthy-food/>

## A COOKING SCHOOL FOR TYPE 2 DIABETICS

# Codi's Cooking Basics

Participants will learn basic nutrition concepts that they will use to cook and eat a meal. They will also complete a questionnaire that assesses their self-confidence regarding their abilities to cook and eat healthy before and after the class. Classes will be held online due to COVID-19. Class dates are to be determined.

### Qualified Participants Must Be:

- 18 years old or older
- Diagnosed with Type 2 Diabetes by a healthcare provider

### Qualified Participants:

- Will be entered in a drawing for gift cards for groceries of \$75 and \$50 value
- Can gain new cooking skills and nutritional knowledge
- Can earn 3 free meals

**For more information email: [cjenshak@nmu.edu](mailto:cjenshak@nmu.edu)**

Appendix B  
IRB Approval Form



**Graduate Studies and Research**  
Marquette, MI 49855-5301  
906-227-2300  
[www.nmu.edu/graduatestudies/](http://www.nmu.edu/graduatestudies/)

**Memorandum**

**TO:** Anne Stein  
Department of Nursing  
  
Codi Jenshak-Gorzinski  
Department of Nursing

**FROM:** Lisa Schade Eckert  
Dean, Graduate Studies and Research

**DATE:** November 24, 2020

**SUBJECT:** IRB Proposal HS20-1154  
"Evaluation of an Interactive Cooking Class and its Effects on Self-Efficacy in Relation to Healthy Eating in Type 2 Diabetics"

**IRB Approval Date: 11/24/2020**

Proposed Project Dates: 12/1/2020 – 12/31/2021

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Your proposal "Evaluation of an Interactive Cooking Class and its Effects on Self-Efficacy in Relation to Healthy Eating in Type 2 Diabetics" has been approved by the Northern Michigan University Institutional

Review Board. Please include your proposal number (HS20-1154) on all research materials and on any correspondence regarding this project.

If you find that modifications of investigators, methods, or procedures are necessary, you must submit a Project Modification Form for Research Involving Human Subjects before collecting data. Any changes or revisions to your approved research plan must be approved by the IRB prior to implementation.

Until further guidance, per CDC guidelines, the PI is responsible for obtaining signatures on the COVID-19 Researcher Agreement and Release and COVID-19 Research Participant Agreement and Release forms.

All forms can be found at the NMU Grants and Research website:  
<http://www.nmu.edu/grantsandresearch/node/102>

## Appendix C

### Informed Consent Form

#### **Northern Michigan University Informed Consent**

#### **Evaluation of an Interactive Cooking Class and its Effects on Self-Efficacy in Relation to Healthy Eating in Type 2 Diabetics (HS20-1154)**

**You are being asked to participate in a research study. Before you give your consent to volunteer, it is important that you read the following information to be sure you understand what you will be asked to do.**

#### **Investigators**

Codi Jenshak-Gorzinski RN, BSN  
Doctoral of Nursing Practice Student  
Northern Michigan University  
1401 Presque Isle Ave  
Marquette, MI 49855  
cjenshak@nmu.edu  
(906) 399-5858

Advisor: Anne Stein, PhD, FNP-BC, COHN-S  
Assistant Professor School of Nursing  
anstein@nmu.edu  
(906) 227-1540

#### **Purpose of the Research**

This research study is designed to generate more research on the use of cooking schools to improve healthy cooking and eating habits in those living with diabetes. Increasing the amount of research on cooking schools will help facilitate their use in secondary and tertiary treatment of diabetes and also has potential for use in primary prevention of this disease. In this project specifically, the purpose of this research is to determine whether a series of online interactive cooking classes will improve self-efficacy that pertains to healthy nutritional intake patterns in people with type 2 diabetes. Data from this research will be used by the primary researcher to create a Scholarly Project as part of the requirements to complete the doctorate of nursing degree.

#### **Procedures**

If you volunteer to participate in this study, you will be asked to:

- Complete questions that describe your basic demographics, these questions will be emailed to you.
- Complete a questionnaire in Qualtrics before starting classes for Codi's Cooking Basics (CCB), the questionnaire will be emailed to you.

- Watch three brief educational PowerPoints (approximately 15-25 minutes long). These PowerPoints will be posted over the course of three weeks, with one PowerPoint available a week.
- Participate in CCB's live online cooking classes via Zoom OR watch the Zoom recording of CCB's online cooking class and post questions or comments to CCB's discussion board (approximately 30-50 minutes per class).
- Complete a questionnaire in Qualtrics after finishing Codi's Cooking Basics (CCB), the questionnaire will be emailed to you.

Your participation will take approximately 3 to 4 hours to complete.

### **Potential Risks or Discomforts**

This research poses minimal risks to the primary subjects. No individual identifiers will be used in anyway, as demographic items such as educational attainment or email addresses can be considered potentially harmful if data were to be made public. Participants are potentially at risk to trigger or develop food allergies while eating prepared recipes. Participants are required to participate in an online class, and discussion via Zoom or discussion board. These requirements of using technology and being required to socially interact could potentially cause temporary anxiety for some participants. There are no other known risks to study participants.

### **Potential Benefits of the Research**

Participants in this study stand to gain both knowledge and self-efficacy regarding healthy nutritional intake patterns. Participants have the opportunity to engage and connect with peers facing similar health challenges. Participants will also gain 3 free meals (achieved via reimbursement) and will be entered into a drawing for gift cards for groceries of \$50 to \$75 value. Evaluating CCB will expand research on the use of cooking schools to improve the diets of people living with diabetes. Advancing research on this topic is important as cooking classes are a cost-effective way to improve health habits for people with diabetes, and if shown to be successful has potential to reduce health care costs and decrease the effects of diabetes on participants such as blindness, kidney failure, heart attack, stroke, lower limb amputation, and death.

### **Confidentiality and Data Storage**

Data will be collected via anonymous Qualtrics online surveys which will be emailed to participants. Results will remain anonymized. No individual identifiers will be used in anyway. Results will be stored on 2 exclusive jump drives; one which will be stored in a locked office on campus and the other in a locked filing cabinet at the primary investigators home. After graduation, the data from both jump drives will be stored for 5 years in a locked filing cabinet in the primary investigators home. Faculty chair, Anne Stein and potentially another independent statistician will have access to data to assist in statistical analyses until project completion.

### **Participation and Withdrawal**

Your participation in this research study is voluntary. You may refuse to participate or stop participation at any time without penalty. To stop simply contact the primary investigatory and you will be unsubscribed from the emails and withdrawn from the cooking class and discussion board.

**Questions about the Research**

If you have any questions about the research, you may contact: cjenshak@nmu.edu or (906) 399-5858

This research project has been reviewed and approved by the Institutional Review Board for the Protection of Human Subjects at the Northern Michigan University

I have read the information provided above. I understand that by returning signing this form I am agreeing to participate in this research study.

**Printed Name:** \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date** \_\_\_\_\_

**KEEP THIS INFORMED CONSENT COVER LETTER FOR YOUR RECORDS.**

Appendix D  
CCB Questionnaire

**Q1. Gender**

1=Male, 2=Female, 3=Other

**Q2. Income**

1= <\$50,000, 2=\$50,000-\$100,000, 3=\$100,000-\$150,000, 4= >\$150,000

**Q3. Age**

1= <25 years old, 2= 25-40 years old, 3=40-65 years old, 4= >65 years old

**Q4. Education**

1=less than high school degree, 2=high school degree or equivalent, 3=associates degree, 4=bachelor's degree, 5=beyond bachelor's degree

**Q5. Race**

1=White, 2=Hispanic or Latino, 3=Black or African American, 4=Native American, 5=Asian or Pacific Islander, 6=Other

Questions 6-12 will be answered where 1=not at all confident, 2=slightly confident, 3=somewhat confident, 4=fairly confident, 5=completely confident. Please select the option that best applies.

**Q6. I am \_\_\_\_\_ that I can consume 1.5-2 cups of fruit a day on most day (adapted from (Flego et al., 2014)).**

1=not at all confident, 2=slightly confident, 3=somewhat confident, 4=fairly confident,

5=completely confident

**Q7. I am \_\_\_\_\_ that I know how many cups of vegetables should be consumed daily (adapted from (Flego et al., 2014)).**

1=not at all confident, 2=slightly confident, 3=somewhat confident, 4=fairly confident,

5=completely confident

**Q8. I am \_\_\_\_\_ that I can name the three main types of carbohydrates.**

1=not at all confident, 2=slightly confident, 3=somewhat confident, 4=fairly confident,

5=completely confident

**Q9. I am \_\_\_\_\_ that I know the difference between how simple and complex carbohydrates affect blood sugar levels.**

1=not at all confident, 2=slightly confident, 3=somewhat confident, 4=fairly confident,

5=completely confident

**Q10. I am \_\_\_\_\_ that I can name a food that is a good source of fiber.**

1=not at all confident, 2=slightly confident, 3=somewhat confident, 4=fairly confident,

5=completely confident

**Q11. I am \_\_\_\_\_ that I know who creates websites ending in .com.**

1=not at all confident, 2=slightly confident, 3=somewhat confident, 4=fairly confident,

5=completely confident

**Q12. I am \_\_\_\_\_ could use a health app/website to help me make healthy food choices.**

1=not at all confident, 2=slightly confident, 3=somewhat confident, 4=fairly confident,

5=completely confident

Appendix E  
Anna Flego Email

Dear Codi,

Thank-you for your interest in the evaluation of Jamie's Ministry of Food Australia and for sharing your research plans with me. In terms of the questionnaire that we developed, this was created as part of commissioned work for the Good Foundation, a charity that implemented the JMOF programs in Australia. If you wanted to use our questionnaire in its entirety, then you would need to seek permission from the Good Foundation ( <https://www.jamiesministryoffood.com.au/the-good-foundation> ). However, I have looked at your questions and they are quite different to the ones that we used for measuring fruit and vegetable intake which originally came from an Australian population based nutrition survey. We did also have some questions around confidence and knowledge though if I recall. For this reason, I think you are ok to just mention that your questions were inspired by the JMOF evaluation but acknowledge you have tailored them to your local program and context. What you are measuring also seems to be a different domain to what we were measuring in those questions- for us- it was about actual intake of fruit and veg. For your questions its confidence to consume fruit and confidence in their own knowledge of what is appropriate daily intake of vegetables. With regards to the fruit question, you should definitely make sure that what you are asking marries up with recommended intake guidelines in your country. For Australia, it is 5 veg and 2 fruit in standard serves where a standard serve is about ½ cup.

My advice to you, is to think about what your program is aiming to do – to change attitudes?, change knowledge?, change behaviours? And then marry up your questions to fit with the desired outcomes but also look to use of standardised questions in population based surveys or program evaluations that best fit your context.

Good luck with your research.

Best wishes,

Anna.

# Appendix F

## Choosing Healthy Carbohydrates PowerPoint

2/10/2022

### Choosing healthy carbohydrates

©2017 American Dietetic Association

### Sugars

- Simple sugars are metabolized by our bodies quickly so they raise blood glucose levels fast
- The effects of simple sugars are short-lived in the body as they do not typically result in full or sustained (American Diabetes Association, 2021)
- Foods from providing energy for our bodies, sugars provide no nutrients for our bodies. This is why they are often referred to as empty calories (WebMD.com, 2017)

### Starches

- Starches are complex carbohydrates and are broken down slowly in our body. It is before starches become glucose levels
- Examples: Wheat, rice, corn, soybeans and potatoes, dentiflours, grain based, flours, beans, lentils, chick peas, and soy
- Includes cereals, breads, and rice
- Starches are broken down into two categories: whole grains and refined grains
- Whole grains are more nutritious than refined grains (American Diabetes Association, 2021)

### The basics of food

- Food consists of macromolecules and micronutrients
- Macromolecules "big"
- Measured in grams
- When our bodies require large amounts (NHL, 2018)
- Examples: carbohydrates, fats, proteins
- Micromolecules "small"
- Measured in mg
- When our bodies require in small amounts (NHL, 2018)
- Examples: vitamins and minerals

### Sugars

- There are two main types of sugars: natural sugars and added sugars
- Natural sugars can be found in milk and fruit
- **Added sugars** are **any** **unprocessed** link such as fruit, carried in heavy syrups, honey, glucose, sucrose, and fructose (American Diabetes Association, 2021)

### Starches

- Whole grain foods contain starch, fiber, B vitamins, minerals, essential fatty acids and vitamins (American Diabetes Association, 2021)
- Refined grains contain mostly starch and are stripped of many nutrients components when processed
- To be sure your product is actually a whole grain product: look for 100% whole wheat, 100% whole grain, or whole wheat flour in the ingredients list. Keep this in mind when purchasing products like pasta, breads, and cereals (Mayo, 2019)

### Carbohydrates (Carbo)

- Help to convert glycogen to energy, help maintain weight, and fuel our bodies (WebMD.com, 2017)
- Carbs are measured in grams
- Examples: carbohydrates
- Sugar (simple carbs)
- Fiber
- Refer to an diabetes association, 2021
- The difference between a simple and a complex carb is in how quickly it is digested and absorbed (Diabetes.org, 2017)
- In total carbs, the term "total carbohydrates" includes all three types of carbohydrates (Diabetes.org, 2017)

### Sugars-added sugars

- There are many different names for added sugars
- Examples: table sugar, high-fructose corn syrup, brown sugar, cane sugar, sucrose, fructose, glucose, dextrose, maltose, fructose, and fructose
- Look to find these words on food labels that chemical names of added sugars and in "carbs"
- Try to identify composition of these ingredients! (American Diabetes Association, 2021)

### Fiber

- Fiber comes from plants so there is very little fiber in animal products like milk, eggs, meats, poultry, and fish
- When you consume fiber, most of it passes through the intestines and is not digested
- Fiber helps you feel full and satisfied after eating, contributes to digestive health, and can help reduce cholesterol levels
- The ADA recommends consuming 35 to 48 grams of fiber each day
- Increase your fiber intake gradually and increase water intake simultaneously to prevent stomach irritation and constipation (American Diabetes Association, 2021)

**Fiber**

- Good sources of fiber:
  - Fruits and vegetables like black beans, kidney beans, pinto, chickpeas, white beans, and lentils, apples, corn, and berries
  - Whole wheat pasta
  - Whole grain cereals/breads (especially those with 3 grams fiber or more per serving, and made with 100% whole wheat, 100% wheat bran, or oats)
  - Most fish products, walnuts and almonds (but not those in moderation because they also contain a lot of calories and can be high in fat) (small amounts)

(American Diabetes Association, 2020)

**Carb Counting**

- GI 55 or less, GI 55-69, GI 70 or more/100g
- Examples:
  - White rice(72) (high)
  - Brown rice(49) (medium)
  - Apples(55) (low)
  - Instant mashed potatoes(77) (high)
- (Harvard Health Publishing, 2018)
- If you are interested in trying this, please discuss it with your doctor with your dietitian and get members of your diabetes care team to see if carb counting can work for you

**References**

American Diabetes Association. (2020). *Standards of Medical Care in Diabetes—2020*. <https://diabetes.org/standards-of-care>

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**Carb Counting**

- You may hear the term carb counting and glycemic index when learning about carbs.
- These tools have a large role in determining our blood sugar levels, help diabetes use carb counting to stabilize blood sugar.
- To carb count, one must identify which foods contain carbs and how rapidly these carbs will affect blood sugar levels (Patterson, 2019).

**Conclusion**

- Hopefully you are now beginning to better understand how to make healthy food choices regarding carbohydrates.
- The goal is for you to minimize sugars (added sugars) and increase starches and fiber and to choose healthier foods that stabilize blood sugar.

**Carb Counting**

- <https://www.health.harvard.edu/diet-and-nutrition/carb-counting-how-to-choose-the-right-foods> are glycemic indexes to determine how quickly food
- <https://www.health.harvard.edu/diet-and-nutrition/carb-counting-how-to-choose-the-right-foods> means below 55 carb food is a carb GI 55 based on how quickly they raise blood sugar
- GI 55 or less, GI 55-69, GI 70 or more/100g
- <https://www.health.harvard.edu/diet-and-nutrition/carb-counting-how-to-choose-the-right-foods> means below 55 carb food is a carb GI 55 based on how quickly they raise blood sugar

(Harvard Health Publishing, 2018)

**Questions?**

# Appendix G

## Food Labels: Tips for Diabetics PowerPoint

2/10/2022

### Food Labels: Tips for Diabetics

Codi Jemshak RN, BSN, NMU DNP Student

#### Serving Size/Servings per Container

- The purpose of a serving size is to break down the food product into familiar units such as cups or pieces (FDA, 2016).
- In this example, what is the serving size?
- Re-weigh your container to find the total number of servings in the entire container of food (FDA, 2016).
- In this example, how many servings are there in the entire container?



#### Calories

- Calories are a measure of how much energy we get from our food (FDA, 2016).
- Reducing the number of calories you eat and drink with the number of calories your body uses is important for achieving a healthy body weight (FDA, 2016).
- Calorie labels vary based on your age, gender, height, weight, and physical activity level (FDA, 2016).
- Recommended calorie intake for women is typically 1,800-2,000 and for men is 2,400-2,600 (Government of Canada, 2018).



- Being able to read food labels is an important skill for diabetics.
- Food labels tell us about what is in our food.
- Choosing healthy foods is important for maintaining blood sugar control and many other components of our overall health.

#### Serving Size/Servings per Container

- COMPARE the number of servings serving size and servings per container to find containers with labeling that the number listed on the product are better than they actually are.
- How many ounces and how much sodium (mg) is one serving of soup?
- However, when eating soup, think of it as the whole unit for how many ounces and how much sodium is in the whole cup of soup?



#### Nutrients/Vitamins and Minerals

- In the sodium facts section, we see grams of sodium and that that's measured in milligrams, grams, and kilocalories (Government of Canada, 2018).
- The carbohydrate of the total amount of eating, are for higher percentages of them and complex carbs, and lower percentages of simple sugars and added sugars.
- Protein: Important for proper immune and cognitive function, maintaining heart health, and for bone to calcium, as well as the growth, help you feel full longer, therefore you should consume protein daily (Government of Canada, 2018).
- Protein: Recommended protein intake should be at least 0.8 grams of protein per kilogram (2.2 lbs) of body weight per day or 48g for women and 55 grams of protein per day (Government of Canada, 2018).



#### Important Components of a Food Label

- Serving size/Servings per container
- Calories
- Nutrient Facts and Vitamins and Minerals
- The Percent Daily Value



#### Serving Size/Servings per Container

- How many ounces and how much sodium (mg) is one serving of soup?
- How many ounces and how much sodium (mg) is the whole cup of soup?
- How many ounces and how much sodium (mg) is the whole cup of soup?
- How many ounces and how much sodium (mg) is the whole cup of soup?



#### Nutrients/Vitamins and Minerals

- How many grams your body needs and to support cell growth. They also help your body absorb calcium and produce important hormones like Vitamin D (Government of Canada, 2018).
- There are many different types of fat.
- The Recommended Daily Allowance (RDA) is the amount of a nutrient that is considered to be enough to meet the needs of most people (Government of Canada, 2018).
- Vitamins and Minerals: Essential nutrients for various body functions and overall health to maintain levels high in vitamins and minerals.



**The Percent Daily Value**

- The Percent Daily Value (PDV) is expressed as a % of the daily needs. Thus, the PDV shows how much a nutrient in a serving of food contributes to a diet. Daily diet needs are based on a diet of other people's PDVs.
- The PDV can help you determine if a serving of food is high or low in a nutrient.
  - 5% PDV or less is a good percentage to consider low
  - 15% PDV or more is a good percentage to consider high
- Percent Daily Values are based on a diet of other people's PDVs. (US Department of Agriculture, 2011)



**Fruit and Vegetable Intake**

- Eating fruits and vegetables provides many health benefits.
- People who eat more vegetables and fruits have a reduced risk of chronic diseases such as diabetes, heart disease, heart attack, stroke, and some cancers. (US Department of Agriculture, n.d.)
- Adults need at least 1.5 cups of fruit/daily and 2.5 cups of vegetable/daily. (US Department of Agriculture, n.d.)

Questions???

**The Percent Daily Value**

- Percent Daily Values are based on the recommended amounts of each nutrient that people should consume daily.

Nutrient	100g	250g	500g
Calories	100	250	500
Total Fat	10g	25g	50g
Total Carbohydrate	10g	25g	50g
Total Protein	10g	25g	50g
Total Sugar	10g	25g	50g
Total Fiber	10g	25g	50g
Total Sodium	10g	25g	50g
Total Calcium	10g	25g	50g
Total Iron	10g	25g	50g
Total Zinc	10g	25g	50g
Total Magnesium	10g	25g	50g

**Fruit and Vegetable Intake**

- The references, here are examples of 1 cup of fruit: 1 small apple (5cm diameter), 1 large banana (9" long), 12 medium grapes, 1 large orange (5" diameter), or 1 large strawberry. (US Department of Agriculture, n.d.)
- The references, here are examples of 1 cup of vegetable: 3 broccoli spears, 2 medium small carrots, 1 large red pepper (5" diameter, 3" long), 1 large tomato (5"), 1 large ear of corn (9" long), 1 large baked sweet potato (5" x 4" or more diameter). (US Department of Agriculture, n.d.)

**References**

- USDA. (2011). *MyPlate*. Retrieved from <http://www.choosemyplate.gov/healthy-diet>

**Ingredient Lists**

- Ingredients are listed in order by weight. The ingredient that weighs the most is listed first, and the ingredient that weighs the least is listed last. (USDA, 2011)
- USDA. (2011). *MyPlate*. Retrieved from <http://www.choosemyplate.gov/healthy-diet>

Use this information to help you maintain healthy habits as you grocery shop, cook, and eat.

# Appendix H

## Resources for Healthy Eating PowerPoint

2/10/2022

**Resources for Healthy Eating**

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**Online Health Information**

- Websites that are used in class are considered websites created by physicians, pharmacists or registered dietitians. Though these resources can offer good content, they can also offer unreliable information.
- In addition to websites, mobile health apps are also widely used for health information. Apps can be downloaded from computers to give health information or to help individuals track health data such as eating habits or physical activity. Though many apps offer quality health information, anyone can develop a health app, so they can also contain inaccurate health information.

US Department of Health and Human Services, 2019

**Noteworthy Health Websites**

- Another noteworthy website that is created by the ADA is <https://www.ada.com/healthydining/>
- This website is a collection of recipes from easy to make meals to low carb meals to dinner options, and healthy snacks.
- Each recipe has its own Social label so it makes it easy to keep track of your calories, macronutrients, and micronutrients.
- This website also has recipes listed in Spanish.

(American Diabetes Association, 2020)

**Online Health Information**

- In this day and age, health information is highly accessible through the internet and applications (apps) for phones and computers.
- However, not all sources offer accurate or up-to-date health information.
- Which sources can you trust for your health information?

Asking who creates, updates, and funds websites and apps can help you answer this question (US Department of Health and Human Services, 2019).

**Considerations before using health information**

- When using health information from internet websites or applications, look for a disclaimer that is written by a healthcare professional or that comes from a trustworthy source.
- Be careful to notice that do not have disclaimers in the site information they are providing.
- Has been written or updated recently.
- Does not promise quick and easy solutions to solve issues for your health problems.

US Department of Health and Human Services, 2019

**A Notable App**



**Fooducate Nutrition Tracker** (iOS)

Get healthy. Lose weight!  
Fooducate, Inc.  
©2019 Fooducate, Inc. All rights reserved.  
Version 4.1.0.00 (English)  
Free. Offers In-App Purchases.

Apple Inc. (2019). Fooducate Nutrition Tracker (Health and Fitness App). Retrieved from <https://apps.apple.com/us/app/fooducate-nutrition-tracker/id1091891464>

**Online Health Information**

- To discover who creates, updates, and funds particular websites, check the website's "About Us"/"Contact Us" section or the website's address (URL). Common URLs are .gov, .org, .edu, and .com.
- Websites ending in .gov are sponsored by Federal government agencies. These websites are reliable sources of information.
- Professional organizations and well-known medical schools are also good sources of health information; these websites often end in .org or .edu.

US Department of Health and Human Services, 2019

**Noteworthy Health Websites**

- A few noteworthy sources for diabetic patients:
  - Center for Disease Control (CDC) <https://www.cdc.gov/diabetes/>
  - American Diabetes Association (ADA) <https://www.diabetes.org/>
  - Mayo Clinic <https://www.mayoclinic.org/>
  - Chicago and Bevan <https://www.chicagobevan.com/healthcare/>

**Fooducate**

- Fooducate is a health app that is former winner of the US Surgeon General's Healthy App Challenge (2014, 2015).
- The app's goal is to empower its users to achieve their health, and to lose weight (Fooducate, 2019, 2018).
- The app is available for iOS and Android. The app is developed and maintained by Health Inc., a medical and medical device making the app available and easy to use (Fooducate, 2019, 2018).
- Though, this app is free, it may be difficult to give advice that makes personalized recommendations for things such as meal planning or program for individuals (Fooducate, 2019).



## Appendix I

### Southwestern Protein-Powered Bowls Recipe

#### Ingredients

- **ground beef** (90% extra-lean) 3/4 lbs
  - **package frozen vegetable and grain protein blends** (southwestern variety, such as Birds Eye Steam Fresh) 1
  - **diced tomatoes** (14.5 ounce can, no-salt-added) 1
  - **cumin** (ground) 1 tbsp
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#### Directions

1. Heat a Dutch oven over medium-high heat. Add beef and cook until browned, stirring frequently. Stir in the frozen vegetable mixture, tomatoes, and 1 cup water. Bring to a boil. Reduce heat to medium-low, cover, and cook 10 minutes.
2. Remove from heat. Stir in the cumin, 1/4 teaspoon salt, and 1/4 teaspoon pepper, if desired.
3. Spoon equal amounts into 4 bowls.

## Appendix J

### Low Carb Veggie Fried Rice Bowl Recipe

#### Ingredients

- **canola or other vegetable oil** 1 tbsp
- **diced cooked lean protein of your choice** (such as chicken, pork, shrimp, tofu, etc) 1 cup
- **chopped scallions or other onion** 3 tbsp
- **grated fresh ginger** (or 1/8 tsp ground ginger) ¾ tsp
- **minced garlic** ½ tsp (about 1 clove)
- **assorted vegetables, chopped into bite-sized pieces** (cooked or raw) 1 ½ cup
- **cauliflower “rice”** 1 ½ cup
- **egg** (beaten) 1
- **teriyaki sauce** 1 tbsp
- **chopped fresh cilantro** 2 tbsp

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#### Directions

1. Heat a nonstick wok or large skillet over medium-high heat. Add the oil and after about 20 seconds, add diced protein, onions, ginger, garlic, assorted veggies and riced cauliflower, stirring often with spoon or spatula, for about 2 minutes.
2. Reduce heat to medium and pull the mixture away from the center of the pan with a spatula and pour the beaten egg in the center. When it starts to cook, use a spatula to stir all of the fried rice ingredients together for about a minute to finish cooking the egg.
3. Sprinkle teriyaki sauce and cilantro over the top and gently stir just to blend flavors (about 1 minute more). Taste and add more teriyaki sauce if desired. Divide into two bowls and serve!

## Appendix K

### "Spaghetti" and Meatballs Recipe

#### Ingredients

- **small spaghetti squash** 1
- **very lean ground beef** (95% lean) 1 lbs
- **plain bread crumbs** 1/4 cup
- **grated, reduced-fat Parmesan cheese** (divided) 3 tbsp
- **water** (plus extra for cooking squash, divided) 3/4 cup
- **chopped fresh parsley** 2 tbsp
- **eggs** 1
- **garlic powder** 1 tsp
- **black pepper** 1/2 tsp
- **low-sodium spaghetti sauce** 2 cup

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#### Directions

1. Fill a soup pot with 1 inch water and place whole squash in water. Bring to a boil over high heat, cover, and cook 25 to 30 minutes, or until tender when pierced with a knife. Remove squash to a cutting board and allow to cool slightly. Cut squash in half lengthwise; remove and discard seeds with a spoon. Scrape inside of squash with a fork, shredding into noodle-like strands. Cover to keep warm.
2. Meanwhile, in a large bowl, combine ground beef, bread crumbs, 2 tablespoons Parmesan cheese, 1/4 cup water, the parsley, egg, garlic powder, and pepper; gently mix until well combined. Form mixture into 8 equal-sized meatballs.
3. Coat a large skillet with cooking spray. Cook meatballs over medium heat 8 to 10 minutes or until browned, turning them occasionally. Add spaghetti sauce and remaining 1/2 cup water. Cover and cook 10 to 15 minutes or until meatballs are no longer pink in center.
4. Serve the spaghetti squash topped with sauce and meatballs. Sprinkle with remaining 1 tablespoon Parmesan cheese just before serving.

