THE EXPERIENCES OF PHYSICIANS WHO IMPLEMENT A WHOLE FOOD, PLANT-BASED DIET AS A TREATMENT MODALITY FOR CHRONIC DISEASE

An applied doctoral project submitted

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by

Jennifer Christine Reinert

Abstract

The prevalence of chronic disease is a growing concern in the United States. Prevention is the most affordable and effective way to prevent and/or reduce risk of chronic disease. Natural whole food, plant-based diets have been used across the world to prevent and treat various diseases for thousands of years. There is evidence being presented on the benefits of eating a whole food, plant-based diet-based diet; however, there still remains a large gap between promoting this type of health and nutrition, and the medical community. This project examined experiences of physicians who implement a plant-based diet as a treatment modality, explored how they effectively changed eating habits in their chronic pain patient population, and examined the efficacy of this type of treatment. The research questions proposed in this project addressed challenges, barriers, and successes that a plant-based diet plays in chronic patients' treatment. A case study methodology with 1:1 interviews that focused on open-ended questions examined the experiences of physicians. Purposeful sampling was used to recruit seven whole food, plant-based physicians practicing integrative medicine in the United States. Seven themes emerged: nutrition education, discovery, severity of diagnosis, demographics and culture or patient, spousal resistance, prescribing diet, and solutions for the future. These themes provide a deeper insight to the experiences physicians have in both training in nutrition and implementing a whole food, plant-based diet as treatment modality. Results indicated that physicians believed discovery was the most important factor in counseling patients on lifestyle change. It was also reported that barriers (in particular the spouse/partner) were important in hindering behavior change. Significant relationships

between the physician's health habits, perceived barriers, and practices were found. This study contributes to social change by serving as a guideline for the creation of effective strategies for physician practices when implementing whole food plant-based diets as treatment for chronic disease. Additionally, data from this study may be used to advocate changes in the education, training, and certification of medical students.

Key words: *integrative medicine, integrative medicine and health, integrative medicine, chronic disease, integrative nutrition, chronic disease treatment, health promotion, whole food, plant-based diets, vegetarian diets, vegan diets, vegetarian diets, vegan diets, lifestyle medicine, nutritional education medical school, plant-based medical doctor, plant-based practitioner, WFPB diet, holistic nutrition, chronic disease and first-line treatment*

DEDICATION

I would like to dedicate my work to “My Loves,” my family. First and foremost, I would not have made it this far without my Dad. He is the reason I made it through this program, after calling him late at night in tears ready to drop out working full-time, raising three kids alone, and exhausted. He continued to push me through reminding me this was my dream. My father has inspired me to finish my degree despite the numerous challenges placed in my path, “Thank you for loving me, for being my eyes when I couldn’t see” (Bon Jovi).

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I thank God for blessing me. He provides me with strength, endurance, and a strong sense of passion in realizing that all things are possible for those who believe… "And if Our God is for us, then who could ever stop us?" (Chris Tomlin).

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It has been my dream for the past decade to achieve the highest level of academic excellence in education, and it took the encouragement of my academic team to motivate me through this most incredible journey. Finally, I want to thank everyone who has contributed to my success. I am immensely grateful to my chair Dr. Heather Frederick, my committee chair, for her ongoing encouragement, patience, guidance, and immense knowledge that helped me grow and think critically. Your leadership skills and knowledge have helped me to achieve this ultimate goal of mine. It has been an honor to work with you. I would also like to thank my committee members, Dr. Melanie Shaw and Dr. Scott Burrus, for their time and supportive feedback to help me move forward in this program so that I am successful. In addition, I would like to thank Marissa Hammond, my academic advisor for her invaluable input, time, and kind support.

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CHAPTER I: INTRODUCTION

Chronic disease in the United States is at an all-time high with an estimated 190 million Americans suffering debilitation (FightChronicDisease.com, 2016). This number accounts for 59% of the population living with preventable illness in our country. Chronic disease is quickly becoming a national epidemic in American society and has been rapidly increasing over the past 30 years (Centers for Disease Control and Prevention [CDC], 2016). Furthermore, 75 million of these individuals are living with two or more diagnosed chronic diseases. The Partnership to Fight Chronic Disease (2017) stated, "In America, 1,100,000 lives could be saved annually through better prevention and treatment of chronic disease." The results of this project may provide insight into targeted physicians' experiences of introducing a plant-based diet as treatment modality for people diagnosed with a chronic condition.

Our current healthcare system as a whole encourages the use of very expensive pills and procedures to treat disease. In 2014, global pharmaceutical sales hit an all-time high reaching a trillion in sales. This number is expected to increase rapidly to 1.3 trillion by 2018 as reported by the leading researchers in pharmaceutical analysis. The highest levels of spending projected in pharmaceuticals for 2016 will target cancer, diabetes, asthma, and COPD (CMR Institute, 2013).

Evidence for prevention and treatment with plant-based diet remains strong, yet large gaps remain in our knowledge about how to change eating habits effectively in our society (Halpin, Morales-Suárez-Varela, & Martin-Moreno, 2010). Despite the wealth of documented research linking nutritious diets to disease prevention and wellness, the importance of eating a healthy diet receives little attention in most conventional medical practices. Throughout regions of the world where a whole food, plant-based diet is most common, disease rates have been considerably lower than in the United States (Le &

Sabate, 2014). There is a growing body of rising evidence recognizing that a whole food, plant-based diet may have a significant impact in the intervention and prevention of cardiovascular disease, diabetes, stroke, renal disease, arthritis, Alzheimer's disease, osteoporosis, and many forms of cancer. Over the past several years, however, a shift is slowly occurring as more U.S. physicians are beginning to recognize the link between whole foods and health and are advancing their nutrition knowledge to provide alternative methods of treatment for their patients. This new awareness is attributed to the recent advancement in nutrition education to provide better patient care (Le & Sabate, 2014). The aim of this project was to examine experiences of physicians who implement a plant-based diet as a treatment modality, explore how they change eating habits effectively in their chronic-pain patient population, and examine the efficacy of this type of treatment.

Research is needed to explore the gap in literature about the use of the whole food, plant-based diet for first line of treatment for chronic disease. According to the U.S Centers for Disease Control and Prevention (2016) most chronic diseases could be prevented, delayed, or managed through simple lifestyle changes including both diet and exercise. As the leading cause of death in the United States, chronic disease is not only costing lives, it is also gravely reducing the quality of life. The latest national data calculated an alarming figure of 42 trillion dollars in cost for chronic disease in the U.S from 2016 to 2030.

Background of the Study

Healthcare costs have been a concern for the American population, with the U.S. ranking the highest in the nation for healthcare taxes, yet with largely unaffordable premiums and deductibles (Himmelstein & Woolhandler, 2016). Evidence for prevention and treatment with a plant-based diet remain strong, yet large gaps remain in our knowledge about how to change eating habits effectively in our society (Halpin et al.,

2010). According to the Department of Health and Human Services and U.S. Department of Agriculture, (2015), in order for the current state of health in America to change, behavioral diet changes must be implemented. The current study was prompted by the need to explore the use of implementing a plant-based diet as the first line of treatment for chronic disease.

Specifically, this problem exists despite the overwhelming evidence of the health benefits of a whole food, plant-based diet, and many patients remain unmotivated to change their dietary habits due to the challenge for physicians to implement and support the importance of introducing a whole food, plant-based diet as a first-line treatment to their patients for chronic illness (Tuso, Ismail, Ha, & Bartolotto, 2013). Additionally, if medical professionals do not eat well or are not physically active, they will likely have a hard time convincing their patients to do the same. As a result, the public must rely on corporate messages that are often more concerned about marketing products, rather than about promoting human health (Campbell & Campbell, 2005).

Skepticism of scientific evidence linking a whole food, plant-based diet with a decrease in chronic disease is the norm in our society. However, during the spring of 2013, Kaiser Permanente the largest health maintenance organization (HMO) in the United States with 182,000 employees, including 17,000 physicians, took a bold stand on voicing the superiority of recommending a whole food, plant-based diet to promote health (Tuso et al., 2013). If eating this type of diet was to be achieved, cultural, social, and personal values around a whole food, plant-based diet must be integrated into public awareness. The specific problem of this research addressed the role of physicians to emphasize to patients to make nutrition a priority, and to encourage patients to see a whole food, plant-based diet as medicine, medicine that is vital to their health plan for preventing and treating chronic disease (Devries & Ward, 2014).

Kaiser Permanente published an update in their official journal that read "too often, physicians ignore the potential benefits of good nutrition and quickly prescribe medications instead of giving patients a chance to correct their disease through healthy eating and active living" (Tuso et al., 2013, p. 65). Therefore, physicians should consider recommending a plant-based diet to all their patients, especially those with high blood pressure, diabetes, cardiovascular disease, or obesity. Most individuals rely on media and their physicians to obtain the information they seek for dealing with their health concerns; however, medical doctors receive as little as 20 hours of training on nutrition (Adams, Lindell, Kohlmeier, & Zeisel, 2006). There is a lack of public awareness on using a natural alternative diet as prevention and treatment for chronic disease**.**

Justification Statement

This project was designed to contribute to the awareness of social change through the promotion of a healthy lifestyle through diet intervention. As more doctors and public officials become aware of the healing power of prescribing a plant-based diet as first line treatment, the question arises: Why don't they share the information with their patients? The aim of this project was to examine experiences of physicians who implement a plant-based diet as a treatment modality, explore how they effectively change eating habits in their chronic pain patient population, and explore the efficacy of this type of treatment. This study aimed to develop the meanings and understanding of health and wellness to the persons suffering from debilitating chronic illnesses in hopes of understanding what might be needed to make positive change (Roberts & Ilardi, 2005).

A qualitative exploratory study was proposed as the preferred method of research design for this project. This type of study allowed for research into complex phenomena that would not readily be conveyed in quantitative design. The rationale for using this type of research method and design was to gain a deeper understanding of the behaviors

associated with physicians implementing and motivating patients to follow a whole food, plant-based diet as a first-line treatment for chronic disease. This method provided a deeper understanding of the challenges, barriers, and successes surrounding this type of protocol. Food in our society takes on a very ingrained cultural role in our society and one that is extremely difficult for most to be willing to understand and change. The importance of this project aimed to examine the experiences of physicians who implement a whole food, plant-based diet as a treatment modality to develop the meaning and understanding of health and wellness to the persons suffering from debilitating chronic illnesses in hopes of understanding what would be needed to make positive change (Roberts, & Ilardi, 2005).

Purpose of the Study

The purpose of this project was to examine experiences of physicians who implement a whole food, plant-based diet as a treatment modality for chronic disease. For this project, the exploratory case study was used to contribute to the awareness of social change through the promotion of a healthy lifestyle through diet intervention. Researchers argued that this is seen as treating the cause of disease, not the symptoms, as medicine should be practiced (Rakel, 2017). As more doctors and public officials become aware of the healing power of prescribing a whole food, plant-based diet as first line treatment, the question arises: Why don't they share the information with their patients or the public? This study aimed to look at the problem that exists in America, a major disconnect between the research and evidence in adopting a whole food, plant-based diets and how patients and clinicians perceive this type of diet.

Data was collected followed by personal phone interviews with seven selected physicians who were interested in participating in the research project and providing further information. Specifically, the project was based on U.S. practicing physicians

who prescribe whole food, plant-based diets as treatment modality for chronic disease. The specific intended findings of this project were collected and documented to share the project outcomes both to bring awareness to physicians, organizations, and other related complementary and alternative practitioners, and to guide them in helping patients to make better nutrition choices for prevention and treatment of disease, encouraging optimum health. The study focus was to provide an in-depth understanding of the experiences, successes, and challenges of physicians prescribing a whole food, plant-based diet as treatment modality. Throughout this study, the need was identified to understand the experiences of the physicians who are recommending a whole food, plant-based diet in hopes of treating chronic disease. The desired outcome was to bring awareness that may also lead to significant improvement in patients' overall health.

The results of this applied doctoral project are important to medical practitioners and organizations because they may provide insight into the success and challenges experienced by physicians and the strategies they used to implement a whole food, plant-based diet practice. Over the past several years, a shift has been occurring, as more U.S. physicians are beginning to recognize and understand the link between whole foods and health. This movement of whole food, plant-based diet for physician practices are advancing to provide alternative options for their patients (Le & Sabate).

Project Question and Sub-Questions

The project was guided by one overarching research question and sixteen supporting sub-questions.

1. What are the experiences of physicians who implement a plant-based diet as a treatment modality, how effective are they at changing eating habits in their chronic pain patient population, and what is the efficacy of this type of treatment?

Sub-Questions

1. How do you define whole food, plant-based diet nutrition?
2. What experiences or influences motivated you to change from conventional medicine practice to an integrative practice?
3. What model do you utilize in your medical practice?
4. What do you believe has helped you to inspire change with your patients?
5. How have you been able to maintain change over time?
6. How have you been successful handling patient resistance during the process?
7. What outcomes are you looking to achieve with your patients?
8. How do you measure progress in your practice? What types of medical testing do you prescribe if any?
9. What successes have you experienced?
10. In you experience, what specific challenges and barriers do you experience when prescribing a plant-based diet?
11. In your experience, has the patient's perception of susceptibility of getting a disease influenced their adoption of a whole food, plant-based diet?
12. In your experience, has the patient's perception of the severity of their diagnosis or disease influenced their adoption to a whole food, plant-based diet?
13. In your experience has the patient's perception of the benefits of eating a whole food, plant-based diet influenced their decision?
14. In your experiences has the patient expressed any barriers they have in adapting a whole food, plant-based diet?

15. What strategies have been implemented to facilitate an effective whole food, plant-based diet practice?
16. What specific types of nutrition education or other training (in the past or on-going) have you participated in that supports your protocol of prescribing a plant-based diet?

Importance of the Study

The aim of this project was to examine experiences of physicians who implement a plant-based diet as a treatment modality and explore the significance that nutrition plays on the health of the American population. The prevalence of disease is on the rise; studies in the areas of prevention and treatment are needed to reduce chronic illness and disease. Prevention is the most affordable and effective way to prevent and or reduce risk of chronic disease. According to the American Dietetic Association (2016), "appropriately planned vegetarian diets, including total vegetarian or vegan diets, are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases" (pg. 1). The challenge people often face is the conflicting information that is portrayed in the media and even from their clinicians, but the overwhelming body of medical literature constantly supports moving toward a diet based on more plant-based whole foods for preventing and reversing chronic disease (Campbell & Campbell, 2005).

The majority of the population is unaware of the importance of dietary guidelines, leaving only a small percentage following recommended nutritional guidelines. Food industry messages convey conflicting messages about nutrition, obesity, and chronic disease. We are facing a chronic health crisis in our society today. Public recognition at a national government level can play an important role in health and wellbeing (Walls, Walls, & Loff, 2012).

The aim of this project was to examine experiences of physicians who implement a plant-based diet as a treatment modality and explore how they effectively change eating habits in their chronic pain patient population, as well as the efficacy of this type of treatment. While there is a wealth of documented research linking nutritious diets to disease prevention and wellness, the importance of eating a healthy diet receives little attention in most conventional medical practices (Hargrove, Berryman, Yoder, & Beverly, 2017). Specifically, this growing body of rising evidence recognizing whole food, plant-based diets may have a significant impact in the intervention and prevention of cardiovascular disease, diabetes, stroke, renal disease, arthritis, Alzheimer's disease, osteoporosis, and many forms of cancer. Throughout regions of the world where a whole food, plant-based diet is most common, disease rates have been considerably lower than in the United States (Le & Sabate, 2014).

Data were collected via personal phone interviews with the selected physicians who were interested in participating in the research project. The project was designed to focus on 10 participating U.S.-based practicing physicians who prescribe whole food, plant-based diet-based as treatment modality for chronic disease. The specific intended findings of this project were collected and documented in hopes of sharing the project outcomes both to bring awareness to physicians, organizations, and other related complementary and alternative practitioners, and to guide them in helping patients to make better nutrition choices for prevention and treatment of disease, encouraging optimum health. The focus of the project was to provide an in-depth understanding of the experiences, successes, and challenges of physicians prescribing a plant-based diet as treatment modality. Throughout this study, the need was identified to understand the experiences of the physicians who recommend plant-based diets in hopes of providing awareness to traditional non-plant-based physicians' treatment of chronic disease. The

desired outcome was to bring awareness that may also lead to significant improvement in patients overall health.

The results of this applied doctoral project are important to medical practitioners and organizations because they may provide insight into the success and challenges experienced by physicians who prescribe a whole food, plant-based diet as a first line of defense, and the strategies they used to implement a whole food, plant-based practice. Over the past several years, a shift has been occurring as more U.S. physicians are beginning to recognize and understand the link between whole foods and health. This movement of whole food, plant-based diet physician practices are advancing to provide alternative options for their patients (Le & Sabate, 2014).

Conceptual Framework

The reason for conceptualizing the link between diet and the factors that affect an individual's health is to provide insight on how physicians recommending a whole food, plant-based diet can prevent or improve their chronic-pain patients' condition (Devries & Ward, 2014). The conceptual framework for this study, the Health Belief Model (HBM) was to serve as an investigative roadmap used to examine the proposed research topic (Bloomberg and Volpe, 2012).

During the 1950s, the HBM was created by a group of social psychologists: Hochbaum, Rosenstock, and Kegels working in the U.S. Public Health Services (Janz, Champion, & Strecher, 2002; Rosenstock, 1974). Twenty-plus years later during the 1970s, research related to developing health-promoting disease-prevention programs began and relied on this model, which continues to be the prevalent model used in health behavior research.

The HBM was chosen to serve as the conceptual framework for this study as it provided an ideal framework for understanding both healthcare professionals' ability to

influence their patients and their attitude toward their healthcare. The four key concepts identified in the Health Belief Model are related to patient behaviors: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers (Hayden, 2009; Janz & Becker, 1984).

Perceived susceptibility is explained in the HBM as the motivating factor in which a patient is motivated to make a change in their health due to their belief in how significant they feel their medical condition is. Perceived severity is related to the patient's belief that a given diagnosis is serious based on their understanding of the diagnosis. Perception of benefits is based on the extent that a patient believes he will decrease his chance of developing disease or that he can lessen his symptoms based on recommended interventions. Lastly, perceived barriers are the anticipated barriers to change a patient/s beliefs that exist at the time of diagnosis (Muenzenmeyer, 2013).

Of these four key HBM concepts, it has been noted that perceived barriers have the potential for the greatest outcome in understanding a patient's behaviors when implementing preventative care. Given this information, healthcare professionals have the opportunity to influence their patients according to their perceptions of severity (Muenzenmeyer, A., 2013).

Overview of the Project Approach

This project focused on the experiences of physicians who changed their medical practice by prescribing a whole food, plant-based diet based diet to their patients as first line of treatment modality for chronic diseases. This applied doctoral project was conducted in four parts. The first section, part one, included an introduction, problem statement, purpose statement, and significance of the study to explain the project. Part two of this project contains the literature review to synthesize relevant research, and an outline of how the project was conducted.

Part three of this project consists of data collection. The personal interview responses of 10 whole food, plant-based diet-based physicians throughout the United States were collected via a personal phone interview. For the purposes of this investigation, the selected physicians needed to meet the following criteria: (a) based in the United States, (b) carries a medical degree, (c) is or was emphasizing the use of whole food, plant-based diet-based nutrition into their current medical practice, (e) were willing to participate in this research study. The main instrument for data collection used was a semi-structured interview protocol that allowed the researcher to ask additional questions as needed. The data collection was conducted by the interviewer via a recorded interview using a digital recorder in combination with additional note-taking. During this part of the project, data analysis was also be conducted.

Part four of the project was an analyses of the data collected during the interview process. The experiences of the seven physicians interviewed for this project were compiled and recorded in hopes of bringing awareness to physicians, organizations, and other related complementary and alternative practitioners, and guiding them in helping patients to make better nutrition choices for prevention and treatment of disease, encouraging optimum health.

Definition of Terms

This section includes operational definitions for the key terms used in this study. The definitions for these terms are below.

Chronic disease: A health condition or disease that can be managed although they are not necessarily curable. Some examples of chronic diseases in regards to this research include cancer, stroke, diabetes, and respiratory and cardiac disease (Center for Managing Chronic Disease, 2016).

Complementary and alternative medicine (CAM): Alternative medical practices including but not limited to acupuncture, massage, homeopathy, and Oriental practices that are not typical of standard medical care (O'Connell, 2002).

Conventional medicine: A classification of medical practice that is used by healthcare professionals to treat diseases and symptoms using pharmaceuticals, radiation, and surgery (Holmberg, Brinkhaus, & Witt, 2012).

Disease prevention: The measures used to prevent the occurrence of disease, hinder its progress, or reduce its effects once established (WHO, 1984).

First-line treatment: The first method chosen by the doctor to treat a medical condition, illness, or disease (Greger, 2017).

Inflammation (Dishman, Washburn, & Heath, 2004, p. 284).

Integrative medicine: The practice of combining conventional medicine with complementary and alternative medicine to treat a patient (Wilson, 2015).

Lifestyle medicine: A practice that involves the use of therapeutic evidence-based approaches, including whole food, plant-based diet, regular physical activity, adequate sleep, stress management, avoidance of risky substance use, and other non-drug modalities, to prevent, treat, and oftentimes reverse the lifestyle-related, chronic disease (Møldrup, 2004).

Nutrition: The process of providing the body nourishment through food substance (The American Journal of Clinical Nutrition, May 2003).

Nutrition education in medical school: Nutritional educational courses required in medical school to complete curriculum (Ettienne-Gittens et al., 2012).

Physician's perceptions: The views, beliefs, attitudes, and thoughts of the physician in relation to patient and practice (Foster, 2018).

Seventh Day Adventist: A member of a conservative, Protestant, worldwide, and growing body of about 18 million members with a worldwide focus on health and health outreach (Seventh-day Adventist World Church [SDAWCH], 2015a).

Vegetarianism/vegetarian diet: Refers to a person who does not eat meat, fish, or poultry. Vegetarians can eat eggs and dairy products (Delucca, 2014).

Veganism/vegan diet: Refers to a person who avoids all meat, seafood, poultry, and animal products (Delucca, 2014).

Whole-food, plant-based diet: Refers to a diet consisting of fruits, grains, legumes, vegetables, and nuts, with very minimal-to-no animal or dairy products (Dignan, 2014).

Assumptions, Limitations, and Delimitations

This project was developed on the need to identify and explore physician recommending whole food, plant-based diet as treatment modality for chronic disease within their practice. The sample for this project included seven physicians who recommend whole food, plant-based diet as treatment. The location is limited to physician's practicing medicine in the United States.

Assumptions

Assumptions were used to help put in place guiding factors; although these factors were not considered as evidence, they helped to create a reference for the project. This project was guided by three assumptions.

1. It was assumed that the physicians from the selected field were an accurate representation of the entire practices across the United States, and that those in other areas would find this case study useful.
2. It was assumed that the physicians chosen as study participants would be able to describe their experiences accurately, recommending whole food, plant-based diet as first line of treatment.

3. It was also assumed that there is generally a lack of physician awareness or a lack of patient education resources.

Limitations

The limitations of this study were features that could have potentially influenced the outcomes of research. There were several limitations that could have affected the outcome of this project.

1. First, personal bias of the physicians interviewed for this project could have been considered a limitation.
2. The second limitation that could have affected the study was geographic location of participants and cultural dietary practice in a particular region.
3. Additionally, this study was limited to the period of 2018, and to whole-food, plant-based diet physician practices located in the United States. Interviews were conducted in English.

Delimitations

The scope of this project was to examine the experiences of seven physicians in the United States who are implementing a whole food, plant-based diet as first line of treatment modality for chronic disease through one-on-one interviews to gain a better understanding of their experiences that have shaped their practice. Past experiences helped to explain the present perceptions that are also part of the scope of study, which were included in the interviews of these physicians to gain their perceptions in regards to the role that nutrition plays on disease management. The personal experiences shared by the physicians in this study could influence practitioners' abilities to improve effective outcomes of various ailments encountered among the general population as a whole. The sample for this study was limited to the United States because physicians in other regions presumably have different education and practice experiences that might alter their

perceptions relative to their geographic location.

Summary

Natural whole food, plant-based diets have been used across the world to prevent and treat various diseases for thousands of years. There is more and more evidence and information being presented on the benefits of eating a whole food, plant-based diet-based diet; however, there still remains a large gap between health, nutrition, and the medical community. This is specifically due to a lack of patient awareness relating to physicians not stressing the importance of a whole food, plant-based diet as first-line treatment for chronic illness. As a result, the public must rely on corporate messages that are far more concerned about marketing products, not about promoting human health. A whole food, plant-based diet has been shown to prevent disease; and in many cases, also reverse certain disease progression quickly. Such a diet might therefore function as an alternative medical treatment. Population studies have shown the body's remarkable power to heal itself when given proper nutrients, yet our medical community is quicker to prescribe medications rather than recommend switching to a whole food, plant-based-diet, which does not rely on a diagnosis to be prescribed (Campbell & Campbell, 2005). Food industry messages convey conflicting messages about nutrition, obesity, and chronic disease. We are facing a chronic health crisis in our society today. Public recognition in the medical field could potentially play an important role in health and wellbeing (Walls et al., 2012).

CHAPTER II: REVIEW OF THE RELEVANT LITERATURE

The problem addressed in this study was the rapidly increasing rates of individuals living with chronic disease, poor health, and disabilities. These increasing rates of chronic disease are preventable, yet they remain the leading cause of death and disability through health challenges like cancer, stroke, diabetes, and respiratory and cardiac disease (Yoon et al., 2014). The purpose of this study was to identify and explore medical practices using nutrition as medicine for prevention and treatment of chronic disease. More specifically, the aim of this project was to examine experiences of physicians who implement a plant-based diet as a treatment modality and explore how they effectively change eating habits in their chronic pain patient population, as well as the efficacy of this type of treatment (Ostfeld, 2017). The purpose of this literature review was to locate published research and scholarly academic papers related to the project.

Emphasis was given to a) the integrative medicine approach, as it is arguably the best means of developing alternatives to over prescribing pharmaceuticals (Eisenberg et al., 2016); b) the whole food, plant-based diets; c) the Seventh-day Adventist Health Study-2, one of the largest dietary studies in modern science (Kwok, Umar, Myint, Mamas, & Loke. 2014; Tonstad, Jaceldo-Siegl, Messina, Haddad, & Fraser, 2016); d) vegetarian diets; e),vegan diets; f), lifestyle medicine; and (6) nutrition education in medical school. These topics were chosen due to their relevance to the current project.

Literature Search Strategy

This review of relevant literature was built from a strategic search of multiple databases accessed through the University of the Rockies online portal, including but not limited to Google Scholar, Sage, Research Gate, the American Psychological Association, ProQuest, and the University of the Rockies online library portal used to search for information concerning qualitative exploratory multiple case study methodology.

Initially, the time interval for this search was filtered for no longer than five years ago. However, since there were limited published articles relating to this study, several were also selected outside of this timeframe.

All search strategies were available through the Internet. Some authors have argued that sourcing medical data from online portals is limited (Flitcroft, Brennan, & Spillane, 2016), but as the rest of this chapter will show, the data uncovered gave both depth and furthered understanding of the subject matter at hand.

Each of the portals used a keyword specific search element. The primary keywords used in these databases were *qualitative and multiple-case study*. Granular keywords used in combination with the above included but were not limited to *integrative medicine, integrative medicine and health, integrative medicine approach chronic illness, integrative nutrition chronic disease treatment, health promotion, whole food, plant-based diets, whole food, plant-based chronic disease, chronic disease plant-based diets, vegetarian diets, vegan diets, vegetarian diets chronic illness, vegan diets chronic illness, lifestyle medicine, lifestyle medicine chronic illness, nutritional education medical school, plant-based medical doctor, plant-based practitioner, WFPB diet, holistic nutrition, chronic disease,* and *first-line treatment* to find scholarly peer-reviewed articles concerning the study topic.

Review of Relevant Literature

This section of the chapter aims to give a thorough synthesis of the content found through the previously described search section. Overall, the content in this section addresses the gaps in literature pertaining to nutrition, medicine, and chronic illness, as well as further expanding the researcher's understanding of the current paradigms in the literature. The first section discusses the literature pertaining to integrative medicine.

Integrative Medicine Approach

In the United States, conventional medicine is the most commonly practiced approach to treating disease (Peregoy, Clarke, Jones, Stussman, & Nahin, 2014). Conventional medicine applies to the theories and practices that graduate students of traditional medical schools and residencies adopt (Walker & Colledge, 2013). Patients for the most part are routinely prescribed conventional medical treatments (Walker & Colledge, 2013). Conventional medicine consists mainly of pharmaceuticals and/or surgery, which are the most widely used treatment modalities in the United States (Chevallier, 2016). The practice of conventional medicine generally does not include holistic nutritional therapy, homeopathy, chiropractic, acupuncture, or aromatherapy, although though they have been shown to be safe, effective, and relatively inexpensive (Chevallier, 2016; Pai, 2016).

Many common diseases can be prevented from occurring in the first place simply by educating oneself on proper nutrition, exercise, and how to reduce everyday stress (Walker & Colledge, 2013). Integrative medical physicians believe poor lifestyle choices are the root cause of many modern chronic diseases (Mirhoseini, Baradaran, & Rafieian-Kopaei, 2014). Integrative practitioners employ an integrative approach to discover and treat the underlying causes of disease (Devries et al., 2014). The integrative physician works to treat the whole person rather than just the disease (Mirhoseini et al., 2014).

Although some authors and researchers such as Devries et al. (2014), argue that the medical field does not need more studies on the correlation between nutrition and health, others believe that more knowledge needs to be publicized for significant action to be taken in implementing these alternative practices into traditional medicine (Braun & Cohen, 2015). This argument comes just four years after the 2013 report on the state of U.S. health, which identified that dietary factors are the most significant risk factor, as

well as being the single factor, for disability and premature death (Devries et al., 2014). The same report found that the reasoning behind this factor is the lack of nutrition education at all levels of medical training (Devries et al., 2014). It is the norm for many European practitioners to prescribe dietary changes to their patients for several months before initiating any prescription-based remedies (Braun & Cohen, 2015), with this being due to the lack of financial incentive behind prescribing practices (Rakel, 2017). This goes hand-in-hand with the finding that, on average, U.S. medical schools dedicate fewer than 20 hours of nutrition education in any four-year range (Devries et al., 2014).

Some doctors have therefore taken it upon themselves to start in the development of integrative medicines in their treatment of certain illnesses (Braun & Cohen, 2015). By using integrative medicine, Bazzan, Newberg, and Monti (2015) have seen significant positive changes in the rate of successful liver transplants. Many times, as the liver is artificially destroyed through poor dietary choices and abusive practices with drugs and alcohol, many doctors are now suggesting treating patients with non-intrusive means prior to surgery (Bazzan, Newberg, & Monti 2015). Researchers have argued that this is seen as treating the cause of disease, not the symptoms, as medicine should be practiced (Rakel, 2017).

The same has been studied in relation to kidney disease (Mitch & Remuzzi, 2016). By integrating dietary manipulations into a comprehensive strategy, Mitch and Remuzzi (2016) prevented and/or ameliorated complications relating to kidney disease. These complications included acidosis, hyperkalemia, hyperphosphatemia, and uremic symptoms (Mitch & Remuzzi, 2016). With this positive finding, they also noted the best means of achieving these results was through simple dietary changes. These dietary changes included the use of sodium bicarbonate supplements (either through ingestion of specific fruits and vegetables, or over-the-counter supplements), lowering intake of

sodium chloride (salty foods) and phosphates (Mitch & Remuzzi, 2016). The benefits of these findings include the ease of implementation, as well as affordability (Braun & Cohen, 2015).

Additionally, it should be noted that Mitch and Remuzzi (2016) supported a low-protein diet, but noted that it is up to medical practitioners to ensure that their patients adhere to these guidelines when facing potential kidney failure. Consumption is still a gray area in many parts of the medical professional and integrative medical professionals, as most patients present with a wide range of pre-existing dietary requirements, as well as different body-types that demand differing levels of intake (Braun & Cohen, 2015; Rakel, 2017).

Another issue in integrative medicine relates to the patient perceptions themselves (Braun& Cohen, 2015). This was studied by Lopez et al. (2017) who focused on integrative oncology, describing it as a relatively new field that is seeking to bring evidence-based, non-conventional approaches into what has become traditional oncology care. However, for this to be done sufficiently, more information is needed about the characteristics of patients seeking integrative oncology consultations (Lopez et al., 2017).

To study this, Lopez et al. (2017) used a cohort of patients presenting for an outpatient integrative oncology consultation. The participants completed a CAM-use questionnaire, Measure Yourself Concerns and Wellbeing, Edmonton Symptom Assessment Scale, Quality of Life Short Form 12, and post-consultation satisfaction questionnaire (Lopez et al., 2017). This comprehensive study took answers from 2,474 new patients' integrative oncology consultations between 2009 and 2013, with 96% completing at least one of the measurement questionnaires (Lopez, 2017). Results showed that the most frequent form of cancer was breast cancer. The most common concerns pertained to seeking integrative and holistic approaches to treatment (34%),

herbal and supplement-based treatments (34%), and dietary/nutritional needs (21%) (Lopez et al., 2017). One of the most significant findings of the study was that those who were seeking out alternatives to conventional medicine and who wanted an integrated approach to their treatment were already deemed physically healthy in spite of their cancer, but had higher levels of anxiety due to stress from the cancer (Lopez et al., 2017). This suggests that those individuals already in control of their diet and health are more likely than those who are not in control of their diet to seek out integrative medical approaches to treatment of cancer (Lopez et al., 2017).

As more individuals in the United States are either bordering on poor health, or already in poor health as a result of unhealthy diets (Rakel, 2017), it may be that Lopez et al. (2017) have found one of the key factors for the lack of full-scale integrative approaches publicized in medical training: the patients are not asking for it. This is in concurrence with findings by Moyad (2016), who argued that multiple lifestyle options exist that can improve or exacerbate cancer and the treatments of cancer themselves. Most of the negative issues arise from a lack of patient effort in the areas of dietary requirement (Moyad, 2016). There are many integrative medicines, particularly dietary changes and supplements, which can improve both the side effects of cancer treatment, as well as the physical cancerous cells themselves (Moyad, 2016).

It should also be noted at this stage that authors such as Moyad (2016) frequently stated that this is one of the few non-bias forms of treatment, as there is no overwhelming financial gain to the medical industry when patients choose to help themselves through dietary changes. However, the consistent and drastic limitation of integrative medical approaches to treatment revolve around a lack of knowledge and educational attention given to this issue (Moyad, 2016; Rakel, 2017).

This comes as academic and scholarly publications have started finding significant

benefits to whole food, plant-based diets as the optimum form of integrative medicine (Wright, Wilson, Smith, Duncan, & McHugh, 2017). Prior to this time, Wright, Wilson, Smith, Duncan, and McHugh (2017) argued that studies have not been able to identify the benefits and evidence of whole food, plant-based diets accurately. Therefore, their study investigated the effectiveness of a community-based dietary program, measuring both body mass index (BMI) and cholesterol at a six-month intervention (Wright et al., 2017). The participants of the study included individuals aged 35-70 years old from one general practice in Gisborne, New Zealand (Wright et al., 2017). Each of the individuals in the study had been previous diagnosed with obesity or being overweight, at least one of type-2 diabetes, ischemic heart disease, hypertension, or hypercholesterolemia (Wright et al., 2017).

The methods used in the study included the normal care provided by the participants' general practitioners. The intervention participants were also asked to attend twice-weekly meetings for 12 weeks and to follow a non-energy-restricted whole food, plant-based diet with a vitamin B12 supplement (Wright et al., 2017). The vitamin B12 has often been noted as one of the few essential vitamins that cannot be obtained through vegetarian, vegan, and other forms of whole food, plant-based diets (Rakel, 2017). The results of the Wright et al. (2017) study showed that at the six month intervention, BMI reduction was greatest with the whole food, plant-based diet compared to those receiving just the normal care from their general practitioner. It was also found that mean cholesterol reduction was greater with the whole food, plant-based diet, but this was not significant in comparison to those receiving normal levels of care (Wright et al., 2017).

Overall, Wrights et al.'s (2017) study was significant as it found, quantitatively, that a whole food, plant-based diet led to vast improvements in BMI, cholesterol, and other risk factors associated with obesity in combination with other health issues. Wright

et al. (2017) concluded their study by claiming that theirs was the only research that has shown the most significant benefits of integrative approaches within treatment, but Fardet and Rock (2014) claimed that intervention approaches could not be measured as a linear reaction (Fardet & Rock, 2014).

Whole Food, Plant-Based Diet

The following section continues along this theme by reviewing the literature on the whole food, plant-based diet. A whole food, plant-based diet, also referred to as "plant-based diet" consists of eating a diet of mainly unrefined and minimally processed plants in their whole form such as vegetables, fruits, beans, lentils, seeds, nuts, whole grains, legumes, flax oil, and minimal amounts of unprocessed plant fats (Wildman, 2016). Plant-based diets limit meat and animal products or exclude meats and animal products completely (Wildman, 2016). This would include products such as meat, poultry, fish, dairy, and eggs (Nestle, 2013). Whole food, plant-based diets also exclude processed foods, including sugar and oils (Nestle, 2013).

Whole food, plant-based diets are frequently found to be the healthiest option available to the individual according to the Healthy Eating Index (Guenther et al., 2013). Strong scientific evidence links the regular consumption of fruits and vegetables with a drastically lower risk of developing chronic disease. The 2010 Healthy Eating Index, as well as the 2010 Dietary Guidelines for Americans, recommending at least nine servings of fruit and vegetables per day, are based on a 2,000 calorie diet (Liu, 2013). These government-funded findings suggest that a whole food, plant-based diets can go a long way to reducing the national risk of developing a chronic disease (Liu, 2013).

The large serving sizes of fruits and vegetables per day can be consumed in any form: fresh, cooked, processed including canned and frozen, as well as 100% fruit juices and 100% vegetable juices, and dried fruits are all considered beneficial to overall human

health (Liu, 2013). These benefits stem from the chemical compounds found in fruits and vegetables (Nestle, 2013). Some examples include phytochemicals (phenolic, flavonoids, and carotenoids), vitamins (vitamins C, folate, and vitamin A), minerals (calcium, magnesium, and potassium), as well as other fibers (Lui, 2013; Nestle, 2013; Tuso et al., 2013). These findings are what Katz and Meller (2014) argued as being most important for the promotion of evidence that showed diet to be the most important influence on health in modern society.

This optimal eating, particularly in the case of whole food, plant-based diets, has also been linked to an overall increase in life expectancy, as well as extended health-life expectancy, and reductions in lifetime risk of chronic disease (Katz & Meller, 2014). The issues surrounding the lack of positive publicity surrounding whole food, plant-based diets has frequently been linked to a lack of commercial interest and medical training in most of the United States (Katz & Meller, 2014). Katz and Meller (2014) have also argued that the reason so many whole food, plant-based diets go without much in the way of medical implementation has been due to the exaggerated stereotypes associated with such practices, as well as the stigma affiliated with dietary practices in general, and the convenience of eating processed foods. These claims have been described as distractions from the issue, and are often forced upon the individual in crude marketing campaigns and negative body-image ideals (Katz & Meller, 2014). This has been most prevalent in the whole food, plant-based diet (Nestle, 2013).

According to Dr. Poothullil (2015), the human body is designed to run efficiently on specific nutrients such as fatty acids, amino acids, vitamins, minerals, fiber, and others. The deficiency of these nutrients is the basis for most diseases (Poothullil, 2015). Many studies reveal eating a whole food, plant-based diet low in animal protein, harmful fats, and refined carbohydrates is best for promoting healthy living (Poothullil, 2015).

Several of the prevalent diseases studied include lower cholesterol, blood pressure, and blood sugar; reversal or prevention of heart disease and diabetes; longer life, healthy weight; and a lower risk of developing diabetes (Poothullil, 2015). This diet may also slow the progression of certain types of cancer (Tuso et al., 2013).

Tuso, Ismail, Ha, and Bartolotto (2013), like so many other authors that are cited throughout this review of relevant literature, also found that plant-based diets are the healthiest option for the American general population. However, Tuso et al. (2013) argued that the other major benefit of plant-based diets is the concern of rising costs of healthcare in the United States. These costs are most prevalently associated with obesity, diabetes, and cardiovascular disease (Tuso et al., 2013). Therefore, whole food, plant-based diets have been described as one of the cheapest and cost-effective means of healthcare (Tuso et al., 2013).

Researchers of studies that return the focus to human health, and that do not encompass the environmental aspect of such as drastic change, have all argued in favor of the beneficial impact that whole food, plant-based diets have on type-2 diabetes, heart disease, cancer, and obesity, as well as the prevention of these diseases as a whole (Martin, Zhang, Tonelli, & Petroni 2013). Martin, Zhang, Tonelli, and Petroni (2013) argued that science should focus on improving our understanding of the complexity of relationships between plants, the human diet, and the health of our species. It would appear from journal articles and books published since 2013 that these sciences have been advanced (David et al., 2014; Tuso et al., 2013), but the benefits of the whole food, plant-based diet continue to meet a stop at the medical office (Nestle, 2013).

It is within these medical offices that the benefits, even in the short term, relating to whole food, plant-based diets can be best distributed (David et al., 2014). In a study of short-term consumption of diets composed entirely of plant-based products, it was found

that changes to microbial community structure can have wide-spread bodily impacts on chronic disease (David et al., 2014). Therefore, this suggests that even individuals with long-term negative dietary practices can benefit from the short-term introduction of whole food, plant-based diets as a means of managing and mitigating the negative impacts of previous poor diets (David et al., 2014). This is one area that the researchers aimed to aid in filling a gap in literature. Whole food, plant-based diets have been found to be beneficial in small-scale studies, but the range and vast-nature of the factors that contribute to making this a norm, even realizing the full extent to its effectiveness, demand an excess of scientific understanding that does not yet exist (Nestle, 2013).

To conclude this discussion, it was clear that there were two constants in the research pertaining to whole food, plant-based diets: a) that studies have uncovered results that point toward significant benefits in moving to exclusively plant-based consumption in both the long and short-term management of chronic disease, b) there is yet to be enough conclusive evidence to support the implementation of a whole food, plant-based diets as a means of medical practice in the United States when treating chronic diseases. This is an area that this project aimed to fill the gap in existing literature. The following section reviews the literature pertaining to one of the only substantial studies of the impacts of diet on human health in the United States.

Vegetarian Diet

Across the globe, there are particular cultures that engage in a minimal or no-meat diet (Trichopoulou, Martínez-González, Tong, & Forouhi, 2014). Such diets, like the Mediterranean diet, have been scientifically linked to lower rates of metabolic diseases (Trichopoulou et al., 2014). This is due to the lower rates of ingestion of harmful products, such as processed meats, snacks, cereals, and refined grains like sugars and starches (Trichopoulou et al., 2014). Many people choose to adopt such a diet despite

their cultural norms not being so significantly linked (Pilis, Stec, Zych, & Pilis, 2014).

For example, vegetarian diets may be adopted for various reasons, including economic, religious, ethical, health, and ecological (Pilis et al., 2014). Pilis, Stec, Zych, and Pilis (2014) argued that maintaining a strict vegetarian diet was the surest way of reducing ones BMI, improving lipid profiles, and reducing blood pressure. However, many Americans choose not to follow a vegetarian diet, as it is seen as far more expensive and inconvenient than a non-vegetarian diet choice (Tilman & Clark, 2014). On top of this, may researchers believed that following a strict vegetarian diet is not enough to reduce one's health issues, as physical exercise is also essential to maintaining a healthy body (Pilis et al., 2014).

It has also been argued that one of the reasons that scientists are promoting the health benefits of vegetarian diets is also due to the high levels of hormones and chemicals found in meat, which have also led to increased instances of health damage (Tilman & Clark, 2014). One study that looked specifically into the health impacts of a vegetarian diet was completed by Yokoyama, Nishimura, et al. (2014). The study sought to further the evidence found previously between vegetarian diets and lower blood pressure, as Yokoyama, Nishimura, et al. (2014) believed that the relationship between the two was not well established enough in scholarly and medical journals. To do this, a systematic review and meta-analysis of clinical trials and observational studies that examined the association between lower blood pressure and vegetarianism was completed (Yokoyama, Nishimura, et al., 2014). Data sources such as MEDLINE and Web of Science were utilized, with articles spanning the years 1900 through to late 2013 (Yokoyama. Nishimura, et al., 2014).

Using a random effects model, the collected data were pooled from baseline characteristics of the study participants, such as dietary data and outcomes (Yokoyama,

Nishimura, et al., 2014). The core outcome of the study was that there were net differences in systolic and diastolic blood pressure, which was associated with the consumption of vegetarian diets (Yokoyama, Nishimura, et al., 2014). This led to the conclusion that consumption of vegetarian diets could be a useful non-pharmacological means of reducing blood pressure in those with dangerously high figures (Yokoyama, Nishimura, et al., 2014). Another finding from the study was that vegetarian diets were significantly linked to lower hypertension, but further study is needed to assess whether this is exclusive to vegetarians, or if other factors play a role (Yokoyama, Nishimura, et al., 2014).

Yokoyama also completed another study in 2014, with Barnard, Levin, and Watanabe (2014). This too looked into the relationship between vegetarian diets and health, but focused on the association between the dietary control and glycemic control in diabetes, as this relationship was also not significantly established in published data (Yokoyama, Barmard, et al., 2014). Similar to the previous study, Yokoyama, Barnard, et al. (2014) conducted a systematic review and meta-analysis of controlled clinical trials that examined the relationship between vegetarians and glycemic control specifically in type 2 diabetes. Using similar data sources. Yokoyama, Barnard, et al. (2014) used the following criteria for study inclusion: a) age of participants >20 years; b) vegetarian diet as intervention; c) mean difference in hemoglobin A1c (HbA1c) and/or fasting blood glucose levels used as outcomes; and d) controlled trials, duration ≥4 weeks. Exclusion criteria were as follows: a) not an original investigation; b) duplicate samples; c) diabetes other than type 2; d) multiple interventions; and e) uncontrolled studies. It was found that vegetarian diets were highly linked to improved glycemic control in individuals with type- 2 diabetes (Yokoyama, Barnard, et al., 2014). These two studies suggested that the vegetarian diet may be used to treat ailments associated with internal medicine (Huang et

al., 2016).

Huang et al. (2016) argued that vegetarian diets may promote weight loss, but there is still inconclusive evidence enough to promote this as fact. Therefore, Huang et al. (2016) also carried out a strategic search of articles that pertained to this subject matter as a means of understanding the potential impacts that vegetarian diets could have on the health of the American population. Twelve randomized controlled trials were included in the analysis of Huang et al.'s (2016) study, totaling 1,151 subjects who received an intervention over a median of 18 weeks. At the end of the study, it was found that vegetarian diets appeared to have significant benefits on weight reduction compared to other non-vegetarian diets, but further analysis was needed to assess differences in body type, as well vegan diets (Huang et al., 2016). Authors such as Singh et al. (2014) found similar health issues associated with individuals in other parts of the world where vegetarianism was no longer a norm. India, for example, has seen an increase in non-communicable diseases, which has been attributed to increases in obesity of the general population (Singh et al., 2014).

Singh et al. (2014) believed this explosion in levels of obesity in India has been due to many once-religious individuals moving to a more westernized and globalized view of their reality, therefore, giving up the dietary restrictions, such as those observed by the Seventh-day Adventists in favor of a meat-based diet. As vegetarian and vegan diets are seen as appropriate, healthy, nutritionally adequate, and able to provide health benefits for the consumer (Melina, Craig, & Levin, 2016), it may be that the growth in fast-food chains, spurred on by mass-production of animal agriculture, has led many individuals to adopt unhealthier options, as they are frequently significantly cheaper (Singh et al., 2014). This had led to increased risks in ischemic heart disease, type-2 diabetes, hypertension, cancers, and obesity, all putting a significant drain on developed

and emerging economies (Melina et al., 2016).

One of the only concerns voiced about the adoption of strict vegetarian diets pertains to pregnancy (Piccoli et al., 2015). Very little evidence has been gathered on how vegan and vegetarian diets impact the health of an expectant mother and her unborn child, so Piccoli et al. (2015) looked to fill this gap in the literature through their study. To do this, the authors conducted a review of literature pertaining to the subject matter (Piccoli et al., 2015). Of the studies that met the predefined criteria for the search, none reported any increases in severe adverse outcomes or major malformations, except for one incidence of hypospadias in infants of vegetarian mothers (Piccoli et al., 2015). Some studies reported lower birth weights of the children of vegetarian mothers, whereas others reported higher birth weights, with a general theme of low blood iron and B12 deficiencies being found in a majority of studies (Piccoli et al., 2015).

In summary, vegetarian diets are often associated with decreased levels of obesity, which is likely the cause of increased health impacts rather than the specificity of the diet itself (Yokoyama et al., 2014).

Vegan Diet

A vegan diet refers to a diet consisting of no animal products including meat, eggs, dairy, and honey (McGirr, McEvoy, & Woodside, 2017). A vegan lifestyle is typically chosen for the benefit of people, animals, and the environment (Mangano & Tucker, 2017). The vegan diet is not so dissimilar to the vegetarian diet described in the previous subsection, but literature pertaining to the practice of limiting one's diet so drastically is lacking (Clarys et al., 2014).

Throughout the research portion for this section, it became increasingly clear that data on the health impacts of veganism are not as well developed as other limited diets (Clarys et al., 2014). Generally, it is believed that vegetarian and vegan diets are better

for overall human health than high-meat intake diets (McGirr et al., 2017, but there are certain restrictions and loose guideline on nutrient consumption with the vegan diet, coupled with the meaning that it may not be the best choice for every individual looking to improve their health (Clarys et al., 2014). This has led to further exploration of a whole food, plant-based diet being the most impactful on health and wellbeing.

The reason that vegan diets were thought significant enough for analysis in this chapter is due to the findings by Janssen, Busch, Rödiger, and Hamm (2016), which stated that the frequency of individuals practicing a vegan diet has drastically increased over the last decade in most industrialized countries. Some of the motivations that have led individuals to take on a vegan diet include animal-related reasons, personal well-being, and environmentally-motivated reasons (Janssen et al., 2016). This is significant, as it suggests that in the case of veganism, one is more likely to restrict their diet on ethical grounds than health (Janssen et al., 2016; McGirr et al., 2017).

When looking for the specific health benefits of veganism, many of the studies found in the strategic search described earlier in the chapter used veganism and vegetarian diets as comparative concepts. An example of a study that used this base was conducted by Dinu, Abbate, Gensini, Casini, and Sofi (2016), whose aim was to clarify the association between restrictive diets (vegan, vegetarian) and risk of chronic disease. To do this, Dinu et al. (2016) conducted a comprehensive search of Medline, EMBASE, Scopus, The Cochrane Library, and Google Scholar in order to identify literature pertaining to the specified subject matter.

The results from the search found that the whole food, plant-based died and or vegetarian diet was the preferred means of controlling risk of heart disease and cancer, whereas the vegan diet was only found significantly to reduce the change of total cancer (Dinu et al., 2016). Further research is needed to address why vegan diets are not

necessarily the heart-healthy diet that many non-scientifically based companies promote it to be (Dinu et al., 2016). This finding may realize a significant change in mindset for the motivations behind such a restrictive diet (Radnitz, Beezhold, & DiMatteo, 2015).

Through an online survey, Radnitz, Beezhold, and DiMatteo (2015) found that most individuals follow a vegan diet for the perceived health benefits, but those who did not conduct the necessary research into how best to maintain physical fitness through the diet frequently stopped following veganism and either returned to vegetarianism or became omnivorous to curb the side effects. Those who placed more pressure on being vegan for animal-related reasons were far more likely to stick to the diet, despite decreasing levels of energy and other negative side effects to giving up iron-rich foods (Radnitz et al., 2015). It should also be noted that Radnitz et al. (2015) found that health-based vegans were far more likely to consume sweets and fruits than ethical vegans.

Due to fluctuations such as this, which may not service the individual in terms of nutritional quality, Castane and Anton (2017) compared the Mediterranean diet and the vegan diet. The predominant positives of both of these diets are environmental, as far more data is needed on each individual diet to make significant claims to comparative health qualities (Castane & Anton, 2017). However, Castane and Anton (2017) both noted that a combination of a vegan and Mediterranean diet is the best option for overall health, as it has led to reduced instances of obesity, diabetes, and cancer. Just singling out the vegan diet has also led to decreased B12 and blood iron levels, which could have negative impacts on health, so it may be that combining veganism with other restrictive diets is the best means of achieving health goals (McGirr et al., 2017).

Many doctors are now turning to lifestyle interventions to treat disease, as well as mental health issues (Mejia, Sanchez, A., Sanchez, J., & Runte, 2016). An example of this is coronary heart disease, which has been found to reverse itself using lifestyle

interventions that include a low-fat plant-based diet or vegan diet (Mejia et al., 2016). In the case study of a 75-year-old male patient who had developed angina, and who was subsequently diagnosed with a moderate coronary arterial stenosis, a prescription of low-fat vegan dieting yielded very significant results (Mejia et al., 2016). Within six months of the lifestyle change, no coronary arterial stenosis was detected in the male patient, suggesting that further action should be taken to understand whether this is a unique case, or part of the human condition that science has yet to understand fully (Mejia et al., 2016). One aspect of the discussion of veganism is lifestyle. The following section expands on this introduction by looking at lifestyle medicine.

Inflammation, Oxidative Stress, and the Role of Antioxidants

Dietary choices are related to inflammation within the body. When the cellular balance is disrupted in the body with either nutrient deficiency (too little) or toxicity (too much), the inflammation process begins. Healthy cells thrive on good nutrition and balance. By preventing cellular breakdown or malfunction, an individual might prevent disease by fueling his or her body with good nutrition (Tallyn, 2007).

Author Tallyn (2007), referred to an excerpt on nutrition from the book *Never be Sick Again,* written by author Dr. Raymond Francis. Throughout this book, Dr. Francis spoke in-depth on the dangers of consuming sugar, white flour, processed oils, dairy and excess animal protein, and the relationship to inflammation in the body. According to Francis (2012), out of these substances, sugar is one of the deadliest toxins people are exposed to on a daily basis. Cells need fresh fruits, vegetables, beans, lentils, seeds, and nuts (preferably organic) to thrive in a healthy environment.

Normal cellular function involves the promotion of free radical cells. When there is imbalance between free radical production due to internal and external sources, oxidative stress occurs. The occurrence of oxidative stress causes inflammation and

chronic disease. Exposures include chemicals, toxins, pesticides, pharmaceuticals, nicotine, drugs, alcohol, lack of sleep, stress, and a poor diet lacking in nutrients. A healthy lifestyle might lead to anti-oxidative stress, the mechanism that helps to balance cell production output. It is necessary to have a balance between free radicals and antioxidants for the body to perform optimally (Francis, 2012).

Antioxidants are created naturally and are found in abundance in plant-based foods such as fruit and vegetables. By consuming enough whole food, plant-based foods, cells are being loaded with antioxidants protecting the body from disease, which in turn reduces the need for pharmaceuticals naturally, with no side effects. By eating a rich whole food, plant-based diet filled with a wide variety of colorful fruits and vegetables, the risk of disease may be prevented, minimalized, and or reversed at the source. A plant-based diet rich in fruits and vegetables may be one of the best defenses against chronic inflammation (Francis, 2012).

Seventh-day Adventist Health Study-2

The Adventist Health Study-2 was a health-related research study that encompassed the health details of 96,000 Seventh-day Adventists living in the United States and Canada (Orlich et al., 2013). This study was significant, not just as a result of the frequency of follow-up research, but because of the unique dietary habits of the religious group (Le & Sabate, 2014). These dietary habits were found to play a significant role in the low risk of heart disease, cancers, high blood pressure, arthritis, and diabetes in the practitioners when compared to a national sample of Americans and Canadians (Fraser et al., 2016). This section of the review of relevant literature assesses both the studies that have come from the second health study, and helped to advance the understanding of the researcher into the best practices that could be implemented to bring about the same health benefits within the rest of the American population.

Despite the ways in which individuals may harm their bodies through chronic illness, brought about by poor dietary habits, the biggest risk was to the individual is death, and it is death that may be avoided with lifestyle changes (Orlich et al., 2013). Orlich et al. (2013) argued that there is only a nominal amount of evidence that exists that has found vegetarian diets to be associated with reduced mortality. Therefore, Orlich et al. (2013) used the case study of the Seventh-day Adventist Health Study-2's North American cohort to assess diet as a baseline, with 73,308 individuals being assessed for quantitative food frequency and dietary patterns.

It was found that, overall, there exists a relationship between the vegetarian diet and mortality, with vegetarian diets being associated with lower all-cause mortality, and some reductions in cause-specific mortality (Orlich et al., 2013). As only 5% of the United States population are vegetarians, with 2% being vegan, the Seventh-day Adventist Health Study-2 allowed for significant information gathering that went hand-in-hand with the likes of Orlich et al.'s (2013) research (Le & Sabate, 2014). When comparing non-vegetarian diets to vegetarian dietary patterns observed by Seventh-day Adventist practitioners, it was found that those following the vegetarian diet were largely protected against cardiovascular diseases, cardio metabolic risk factors, and certain cancers (Le & Sabate, 2014).

All of the studies cited in this subsection found the same health results. What is significant within the context of the health study as a whole is the depth in which the researchers were allowed to go (Fraser et al., 2016). For example, the data collected involved demographic factors such as ethnicity, education (self and parental), occupation, diet, exercise and napping, female sexual history, sun exposure, age at baptism, parent religious affiliation, and who raised the individual being studied (Japas, Knutsen, Dehom, Dos Santos, & Tonstad, 2014). Many researchers noted the importance of these factors in

this religious group, as the religion does not permit heavy cigarette smoking, consumption of alcohol, and diets heavy in animal fats (Burkholder-Cooley, Rajaram, Haddad, Fraser, & Jaceldo-Siegl, 2016). These are the demographic factors that frequently make studying health concepts difficult on the general population of America (Tonstad et al., 2013).

Seventh-day Adventists are known for their strict dietary practices (Fraser et al., 2016), and in the context of this paper, they are important as they highlight one of the few accessible social groups that have been so heavily researched for their health. This has also allowed for findings such as those by Japas, Knutsen, Dehom, Dos Santos, and Tonstad (2014), who found that diet and lower levels of physical activity were associated with gained and attained BMI in men aged 20 to 40-years-old. Inactivity, such as watching television and spending days sat in chairs, as well as short sleep durations could also lead to unhealthy BMI levels (Japas et al., 2014). When comparing men in the Seventh-day Adventist religion to those who did not follow the guidelines outlined by the practice, it was found that men of all ethnicities were likely to have higher BMIs if they ate a non-vegetarian diet, engaged in excessive television viewing and few hours of physical activity (Japas et al., 2013). These practices have also been found to increase the risk of diabetes development in the individual (Tonstad et al., 2013). Vegetarian diets were found to reduce the levels of incidence of diabetes substantially when comparing members of the Seventh-day religion to the average American consumer (Tonstad et al., 2013). Many of the findings within the Seventh-day Adventist Health Study-2 and subsequent research have also found other demographically important trends that linked dietary habits to poor health, such as in Burkholder-Cooley, Rajaram, Haddad, Fraser, and Jaceldo-Siegl's (2016) study, where it was found that coffee drinkers were far less likely to be vegetarians and were also more likely to have lower levels of fruit and vegetable intake than non-coffee drinkers. The lower fruit and vegetable intake levels,

coupled with coffee, were associated with negative health outcomes (Burkholder-Cooley et al., 2016).

Diabetes is most prevalent among African-American communities in the United States (Tonstad et al., 2013), and the results of the Seventh-day Adventist Health Study-2 suggested that African-American practitioners of the religion were substantially less likely to fall victim to diabetes, as well as other chronic illnesses found throughout the African-American communities in the United States not linked to the practices (Fraser et al., 2015). This was studied by Fraser et al. (2015) was a result of the large-scale health potential from this finding.

African-American members of the religious group who followed vegetarian diets were compared to pesco-vegetarians and non-vegetarians (Fraser et al., 2015). From these groups, it was found that those individuals who allowed for fish-based elements within their diets (pesco-vegetarian) differed very little to those non-vegetarian members of the study (Fraser et al., 2015). Another major finding was that the vegetarian diet, overall, holds sizable advantages to African-American individuals in the United States due to reduction in risk of diabetes, heart disease, and other chronic health concerns (Fraser et al., 2015). One of the reasons behind the increased risk of chronic disease, other than the lack of meat-based proteins that often incur high-rates of antibiotics and other unnatural substances in the American farming industrial complex, is the high rate of consumption of legumes (Lousuebsakul-Matthews et al., 2014).

A study by Lousuebsakul-Matthews et al. (2014) assessed the association between foods with high protein content, such as legumes, and meats, by dietary pattern, and hip-fracture incidence. The study was completed by the members of the Seventh-day Adventist Health Study-2, who were studied every two years for health data (Lousuebsakul-Matthews et al., 2014). Controlling for lifestyle variables, it was found

that those individuals who had a daily intake of legumes also had a decreased risk of hip fracture of upwards of 64%; however, eating meat every four out of seven days also decreased the risk of hip fracture, but only by 40% (Lousuebsakul-Matthews et al., 2014). This suggests that proteins may be necessary to reduce the risk of physical injury, while a no-meat diet is better for individuals at risk of developing chronic illness.

Despite the wide-ranging findings from the Seventh-day Adventist Health Study-2, one of the more significant findings by Singh et al. (2014), who found that individuals with good health had also consumed meat, dairy, poultry, and fish at some point in their lives, but once their diets were changed, they went on to reap the health benefits the same as any individual who had always been vegetarian and/or vegan. This finding, coupled with the understanding that the Seventh-day diet also reduces the rate of chronic disease, has the potential to influence the medical profession to seek dietary changes at the root of reducing the impact of chronic diseases, as well as the risk (Fraser, Orlich, & Jaceldo-Siegl, 2015).

Nutrition Education in Medical School

It is clear from the literature that the American medical system is failing through the perpetuation of poor lifestyle choices, leading to negative dietary practices, resulting in high levels of chronic illness (Kris-Etherton et al., 2014). It is common for most Americans to rely on their family doctor or primary physician for advice on diet and nutrition (Bray & Bouchard, 2014). A 2014 study published in the American Journal of Clinical Nutrition indicated that 60% of medical schools in the United States are not meeting minimum recommendations for their students' nutrition education (Bray & Bouchard, 2014). Furthermore, these physicians are reporting feeling inadequately trained, with receiving on average only 20 hours or less of recommended nutrition courses. There is still a lack of nutrition education, and patients often do not receive

information about all of their treatment options (Fillit, Rockwood, & Young, 2016).

Doctors reported they do not practice preventative cardiology because they believe their patients are not capable of changing their diets (McKeown, 2014). Treating chronic illness is a team involvement between the patient and physician and requires empowerment on behalf of the physician and patient's engagement (McKeown, 2014). Ultimately, it is the patient's day-to-day decisions that have the largest impact on health decisions; as a result, it is the role of the doctor to provide them with all of the best options for healthy survival (McKeown, 2014).

According to Daley et al. (2016), nutrition leaders believe that the lack of training in medical schools is because most medical and surgical specialties have insufficient resources to teach current nutritional practices. Daley et al.'s study is one of the only studies conducted into the training of doctors in the field of nutrition, and was administered through an online survey of 36 questions. The survey was sent to 495 Accreditation Council for Graduate Medical Education Program Directions in the fields of anesthesia, family medicine, internal medicine, pediatrics, obstetrics/gynecology, and general surgery (Daley et al., 2016). Though the response rate was low, the results were telling.

Eighty percent of program directors responded from primary care programs, with the rest being surgical and anesthesia (Daley et al., 2016). It was found that the respondents themselves had very low levels of nutritional knowledge, with only 26% of schools having formal curriculum and physicians to teach nutritional education courses (Daley et al., 2016). Most (77%) of the program directors stated that the required educational goals in nutrition were not met by the cohort, leading to the overwhelming result that nutrition education is poor throughout the American medical school system (Daley et al., 2016). This may also be why there is such a limit to the data pertaining to

the medical impacts of poor nutritional practices, and newer introduction to the dieting world such as veganism (Falvo, 2013).

Sarris et al. (2015) argued that nutritional education should also be a norm in psychiatry as a result of the obesity epidemic. Although the determinants of mental health concepts are complex, there is emerging and compelling evidence supporting nutrition as a crucial factor in the high prevalence and incidence of mental disorders, suggesting that diet is as important to psychiatry as it is to cardiology, endocrinology, and gastroenterology (Sarris et al., 2015). However, far more evidence is needed to assess where nutritional education will be most beneficial for the patients (Riekert, Ockene, & Pbert, 2013).

Health Belief Model as it Relates to Diet Change

The Health Belief Model is one of the most frequently chosen conceptual frameworks in understanding health behaviors. It is widely recommended for nutrition education purposes. The significance of HBM is to improve by knowledge, attitude, and practice. One of the major components of this model holds that the patients have choices and are able to make reasonable decisions regarding their health choices. There are four elements of this model that are perceived as 1) perceived susceptibility, 2) perceived severity, 3) perceived barriers, 4) perceived benefits. This study aimed to investigate whether the application of an HBM-based nutrition education model could be effectively used in changing the beliefs of physician's and their ability to influence patients in dietary choices (Naghashpour, Shakerinejad, Lourizadeh, Hajinajaf, & Jarvandi, (2014).

1. Perceived susceptibility – A patient's belief that they are at a subjective risk for developing a long term chronic disease due to inadequate diet.
2. Perceived severity – A patient's belief that the consequences of inadequate nutritional dietary intake causing potential chronic disease, illness, or

disability consequence of their inadequate nutritional dietary intake will cause.

3. Perceived barriers – A patient's belief that there are potential negative aspects of or obstructions to taking a recommended health action.
4. Perceived benefits – A patient's belief that their health and well-being will improve by taking precautionary health related action by changing their diet.

These four theories are important to introduce when developing health programs and interventions because they give the participant instructive guidelines to follow, which hopefully results in a successful outcome. The Health Belief Model (HBM) was one of the first theories of health behavior and is one of the most well-known (Naghashpour et al., 2014). The relationship between the HBM with improvement in nutrition support the need for education intervention.

Lifestyle Medicine

In modern medicine, lifestyle choices are becoming far more prevalent as the reason for the vast number of chronic illnesses in the United States (Friedman, 2016). These lifestyle choices revolve around diet, exercise and physical activity, use of alcohol and tobacco, as well external and mental issues such as stress, anxiety, socialization issues, and poor community structure (Polak et al., 2016). Once limited to the study of problem drug use, lifestyle medicine is now rapidly becoming the first stop for doctors in addressing chronic illnesses such as diabetes, heart conditions, and cancer, as many of them may be avoided or eradicated through non-intrusive medical practices revolving around lifestyle choices (Sarris & O'Neil, 2016).

As the leading cause of death across the world is non-communicable diseases, lifestyle medicine has the potential to be the key area that might promote the long-term

positive impacts of living a healthy life (Friedman, 2016). By combining traditional medical processes with lifestyle medicine, many general practitioners are reducing their rates of specialist referrals for patients at-risk or suffering from chronic disease (Friedman, 2016).

Authors such as Polak et al. (2016) argued that the reason that the planet has such high rates of non-communicable diseases is not exclusively due to poor dietary choices. Polak et al. (2016) believed that it is through a combination of poor nutrition, unhealthy behaviors, physical inactivity, and tobacco use. To study this assumption, Polak et al. (2016) used their study to evaluate the feasibility of training in lifestyle medicine for family physicians in order to enhance the health of their patients and their study area as a whole.

Twenty-six healthcare providers, as well as 21 individuals, took part in the study for the control group (Polak et al., 2016). The results showed that the training program in lifestyle medicine was feasible and had the potential to have wide-scale positive impacts for family practices and trainee doctors the world over (Polak et al., 2016). One of the significant findings was more related to the mental health issues underlying poor lifestyle choices that could lead to poor dietary choices and subsequent chronic illness (Polak et al., 2016). This is in concurrence with multiple other studies that cited mental health issues are the underlying cause of all chronic disease, according to Sarris and O'Neil (2016).

Despite this finding throughout published scholarly literature, Sarris and O'Neil (2016) argued that lifestyle medicine and their targets are largely left without consideration within treatments for depression. Medicine and psychological interventions are almost always seen as the first line of response, whereas those individuals suffering from mental health disorders may be doing more harm to their physical body through

poor lifestyle choices (Sarris & O'Neil, 2016). Hamdy and Mechanick (2016) argued that the prevalence of chronic disease is not a generic element of the American healthcare problem, but is instead, as it is in other nation states, varied among the cultures within the society. This, when discussed in conjunction with the arguments put forward by Sarris and O'Neil (2016), could go as far to mean that many socio-demographic groups are marginalized and at significantly higher risk of developing a chronic disease as a result of long-term multigenerational poor lifestyle choices (Hamdy & Mechanick, 2016).

Due to the necessity of the healthcare professional to act in a sensitive and appropriate nature when caring for patients from different cultures, this may make it increasingly difficult to discuss poor lifestyle choices. as they may be viewed as social norms by the patient (Hamdy & Mechanick, 2016). These factors certainly include dietary choices and patterns, physical activity, economic purposes for chosen diet, religious, and spiritual, as well as attitudes and behaviors (Hamdy & Mechanick, 2016). In terms of the economic burden of poor lifestyle choices, many lower socio-economic classes within the United States can no longer ignore the cycle of deprivation that leads to their increased likelihood for developing chronic disease (Sagner et al., 2014). As lifestyle medicine encompasses prevention, treatment, and diagnosis of potential health issues, it may also need the combined efforts of medical doctors and other members of the medical field to help in the introduction to regular diagnosis and preventative practices (Sagner et al., 2014).

Other issues surrounding the implementation of lifestyle medicine pertain to the means of delivering the message, wherein doctors are unclear about why they are advising the changes they recommend to their patients (Friedman, 2016). However, one key point that Sagner et al. (2014) believed is homogeneous across the field of lifestyle medicine is the introduction of whole food, plant-based diets. They argued that many

patients do not believe that they need to change their lifestyle in order to get better; however, changing one's diet is an easy and proven means of improving overall health (Sagner et al., 2014).

Egger and Dixon (2014) believed that lifestyle medicine should be the first path attempted for improved health, as it is in the United Kingdom. However, there are drastic limitations to this practice in the United States, as obesity, a chronic illness, is now being termed as an epidemic, and therefore drastic measures are being implemented prior to any other means of reducing the number of cases (Egger & Dixon, 2014). Egger and Dixon (2014) argued that this obesity epidemic is of large magnitude and that the medical profession is complacent in establishing the underlying causes, limiting their ability to significantly help the reversal of obesity by treating the symptom rather than the underlying cause.

Overall, it is abundantly clear that the practice of lifestyle medicine, which combines modern medicine with nutrition is a significant area of medical practice in that can help to reduce the risk of chronic disease substantially (Sin et al., 2016). Depression, for example, has been largely associated with cases of coronary heart disease (Sin et al., 2016). Glick-Bauer et al. (2014) went as far as to suggest that other than in viral and bacterial cases of illness, modern medicine has the potential to eradicate most, if not all, chronic diseases through lifestyle interventions. This has to start, according to Pedersen and Saltin (2015) and Leong et al. (2014) in the classroom of medical school, which is discussed further in the following section.

Summary

Is was clear from the literature presented in this chapter that the United States is facing an epidemic of chronic disease and illness (Peregoy et al., 2014). Many diseases such as heart disease, high blood pressure, and cancer are prevalent in the American

population (Walker & Colledge, 2013), leading to some authors arguing that the medical field needs more studies on nutrition and health (Devries et al., 2014). Some practitioners are beginning to prescribe dietary changes when addressing chronic diseases (Braun & Cohen, 2015), looking to stop the issue at the root (Bazzan et al., 2015). The presence of the majority of medical practitioners still resorting to prescribing medicine suggests that there is a gap somewhere between the knowledge, the education, and the practice of medicine on a wide scale.

In terms of the whole food, plant-based diet, the benefits are widespread, but lifestyle factors frequently hinder the choices made by those at risk of developing a chronic illness as well as those already suffering (David et al., 2014; Guenther et al., 2013; Katz & Meller, 2014; Liu, 2013; Vannice & Rasmussen, 2014; Wildman 2016). Even when the results of the Seventh-day Adventist Health Study-2 suggest a minimal-to-non-meat diet most Americans continue to consume an unhealthy diet (Orlich et al., 2013); Tonstad et al., 2013).

Throughout the discussion of vegetarian diets, it was found that the benefits of such practices may be realized in a very short amount of time, especially in cases of heart disease (Melina et al., 2016; Piccoli et al., 2015). However, further evidence is needed to understand fully how vegetarian diets can impact disease risk (Appleby & Key, 2016). When compared to the vegan diet, much of the literature was slightly skewed, with the few health-based papers favoring veganism as a health choice (Janssen et al., 2016), but that mental health issues leading to extreme dietary restrictions must be examined to understand fully the long-term health impacts and/or benefits of such a nominal diet (Clarys et al., 2014).

Finally, lifestyle medicine was discussed in depth and would appear to be one area of the medical field (other than nutrition education) that is far underserving the American

population (Polak et al., 2016). When combined with all of the previous discussion into the benefits of dietary choices, individual lifestyles should be addressed when combating chronic disease (Hamdy & Mechanick, 2016). This, with the addition of nutrition-based education in medical schools, could potentially spur the medical community into adopting integrative medical approaches to treating and reducing chronic disease through recommending a whole food, plant-based diet as treatment modality. Chapter III describes the methodological approaches used in this study.

CHAPTER III: PROJECT APPROACH

The approach of this qualitative applied doctoral project was to explore the experiences of physicians who implement a plant-based diet as a treatment modality for chronic disease. The research questions provided guidance for this study, and helped to identify, understand, and explore the experiences and methods of traditionally trained medical doctors (MD) and how they are successfully motivating patients by introducing a whole-food, plant-based diet as first-line treatment when diagnosed with chronic disease.

Chapter III describes the approach, the target population chosen for the project, interview questions used, and the analytical strategy. In addition, the chapter describes the instrumentation and data collection methods that were utilized to collect data, contains a discussion of the steps taken to protect the privacy of participants, and includes a brief introduction of the procedures planned for analyzing the qualitative data, resulting from the data collection. An evaluation and summary is included at the conclusion of the chapter.

Study Approach

An exploratory qualitative multiple-case study was used as the research design to explore how medical doctors implement plant-based nutrition as first-line treatment for chronic disease into their practice. The researcher's rationale for using this type of research method and design was to gain a deeper understanding of the rationale and behaviors of associated physicians who are currently recommending a whole food, plant-based diet as first-line treatment for chronic disease. Following the review of current relevant literature, a best practice approach was developed for this project. For the purposes of this investigation, the selected physicians needed to meet the following criteria: (a) based in the United States, (b) carries a medical degree, (c) emphasizes the

use of whole food, plant based nutrition, and (d) willing to participate in this research study.

This type of case study in fields such as psychology allows researchers to provide an in-depth holistic examination of real-life events that are not readily conveyed in quantitative design. This case study aimed to answer *how* and *why* questions. Furthermore, the researcher chose multiple-case study design vs. single-case study to offer a robust richer understanding of how plant-based physicians are successfully implementing and motivating patients to conquer chronic disease through the use of diet (Yin, 2011).

Over-Arching Research Question and Sub-Questions

The project was guided by one overarching research question and sixteen supporting sub-questions.

1. What are the experiences of physicians who implement a plant-based diet as a treatment modality? How do they effectively change eating habits in their chronic pain patient population, and what is the efficacy of this type of treatment?
2. How do you define whole food, plant-based diet nutrition?
3. What experiences or influences motivated you to change from conventional medicine practice to an integrative practice?
4. What model do you utilize in your medical practice?
5. What do you believe has helped you to inspire change with your patients?
6. How have you been able to maintain change over time?
7. How have you been successful handling patient resistance during the process?
8. What outcomes are you looking to achieve with your patients?
9. How do you measure progress in your practice? What types of medical testing

do you prescribe if any?

10. What successes have you experienced?
11. In you experience, what specific challenges and barriers do you experience when prescribing a plant-based diet?
12. In your experience, has the patient's perception of susceptibility of getting a disease influenced their adoption of a whole food, plant-based diet?
13. In your experience, has the patient's perception of the severity of their diagnosis or disease influenced their adoption to a whole food, plant-based diet?
14. In your experience has the patient's perception of the benefits of eating a whole food, plant-based diet influenced their decision?
15. In your experiences has the patient expressed any barriers they have in adapting a whole food, plant based diet?
16. What strategies have been implemented to facilitate an effective whole food, plant-based diet practice?
17. What specific types of nutrition education or other training (in the past or on-going) have you participated in that supports your protocol of prescribing a plant-based diet?

Population and Sample

The population for this project includes all U.S. physicians who prescribe a plant-based diet for their chronic pain patients. The sample for this qualitative applied project included seven medical doctors who implemented a plant-based diet for first line of treatment into their conventional medicine practice. The researcher used a purposeful (non-probability) sampling approach for participant selection. The researcher used LinkedIn, the Physicians Committee for Responsible Medicine, and

plantbaseddoctors.org to find qualified participants. The project also adopted a snowball strategy for recruiting participants, in that once a physician chose to participate in the study, he or she was asked for the information of colleagues who might also be interested.

Ethical Considerations

The study participants who were selected were physicians currently prescribing whole food, plant-based diets in their practices within the United States. Permission to recruit physicians and conduct research was granted from the University of the Rockies Institutional Review Board (IRB). The researcher was required to complete the Collaborative Institutional Training Initiative (CITI) online training in human subjects' protection and pass an exam.

The research study provided a detailed informed consent form (see Appendix A) that outlined the research, voluntary participation, and rights. Participation in this study was purely voluntary, and the participants were free to withdraw from the study at any time. The participants would not incur any penalties or consequences for withdrawing (IRB, 2012).

The telephone or Skype interviews were conducted from the privacy of the researcher's home office and the participants' offices. The interviews were recorded to provide an accurate account of each individual physician's experience. The semi-structured interview transcripts were considered to be raw data and are therefore not included within the appendices of the dissertation document. Digital recordings will be destroyed at the completion of the study; the records will be kept for seven years and then destroyed. Permission was requested and received for all discussions to be audiotaped.

Data Collection

The main instrument for data collection was a semi-structured interview protocol exploring the exploring the individual medical doctors who implemented a plant based

diet for first line of treatment into their conventional medicine practice. Participating in the study was voluntary, and there was no compensation offered or provided for taking part in this study. Once the IRB approved the study proposal, the researcher could conduct the study's data collection via recorded interview, using an audio digital recorder in combination with additional note taking. The recorded interview acted as the data file. Significant key points made by the participants were written down in a notebook by the researcher.

The researcher scheduled each interview at a mutually agreed-upon time. Each interview was scheduled for one hour to allow each participant ample time to answer questions. The first portion of the interview included an outline of setup and participant briefing. The researcher discussed confidentiality of information and participation of the study at that time. No follow-up procedures or debriefing sessions were required or offered to the 10 physicians participating in this study. Quotations from the interview transcripts were deemed to be worthy of their inclusion into the findings chapter, Chapter V, in order to add depth and context to the presentation of data in Chapter IV.

Data Analysis

The researcher analyzed the data to determine themes. The researcher prepared the written and recorded data, dissect the information given, and presented the data, analysis and findings. A narrative approach was used to explore and understand the physicians' perceptions in their own words based on their practice experiences while introducing a whole food, plant-based diet as a treatment modality for chronic disease. The physicians, solely ones practicing prescribing whole food, plant-based diets, were chosen in geographical locations throughout the United States. The researcher conducted an Internet search to obtain names and addresses of the chosen list of doctors within the U.S.

The participants were selected based on the criteria set forth by the University of the Rockies.

The participants were invited to an open-ended 1:1 interview with the researcher. A selection of standardized research questions was given by the researcher during the interview to gain relevant knowledge about the physician's experiences. The researcher continued the conversation for 30-60 minutes with unguided questions based upon the beginning conversation and answers to the open-ended questions with the researcher. Upon completion of the interviews, the data analysis was constructed and transcribed within 48 hours of the interview, and the summary results presented in Chapter IV.

Trustworthiness

Validity of qualitative studies was used to establish the trustworthiness in combination with credibility, transferability, dependability, and conformability for this study. Creditability was measured by the level of confidence by the physicians and the accuracy of data gathered. Transferability was measured by applying the results to other situations. Dependability showed the researcher the results may be repeated again in other scenarios. Conformability was used to assure there would be no bias on the part of the researcher (Merriam, 2009).

The researcher recorded the 1:1 interviews with each individual physician and used the recording to transcribe the participants' responses, which accurately established credibility of this study. Each of the 10 participating physicians participated with the understanding that they would only be engaging in a one-time interview with no scheduled follow-up. During the interview, the researcher established necessary clarity when needed. The researcher accomplished transferability in the study by providing a description of the research method, data collection procedures, and results from the data collected. The researcher used a narrative exploratory approach to explain the

physicians' perceptions on prescribing a whole food, plant-based diet as the first line of treatment modality within their practice as it related to the importance of the study.

Summary

The main objective of this applied doctoral project was to explore the experiences of physicians who implement a plant-based diet as a treatment modality for chronic disease. Results of the data analysis for this qualitative exploratory case study that explored experiences of physicians who implement a whole food, plant-based diet as first line of treatment modality for disease prevention is presented in Chapter V. The researcher informed the physicians, who would access the collected data, about the level of confidentiality in reference to any information arising from the study. Trustworthiness was measured by the validity of credibility, transferability, dependability, and conformability used for this study. The main instrument for data collection was semi-structured 30-60 minute telephone interview protocol exploring the perceptions of the 10 individual medical doctors who implemented a plant-based diet for first line of treatment into their conventional medicine practice. Obtaining a better understanding of their experiences and perceptions is important when considering their role in preventing and treating chronic disease.

CHAPTER IV: FINDINGS, EVALUATION OF FINDINGS AND RECOMMENDATIONS

The goal of this chapter is to present the findings of data collected, answer the research questions, and evaluate findings. This chapter also provides recommendations for future research. Finally, the limitations and implications of this study are addressed.

The purpose of this study was to examine the experiences of physicians who implement a whole food, plant-based diet as a treatment modality for chronic diseases. The main research question was *What are the experiences of physicians who implement a plant-based diet as a treatment modality, how do they effectively change eating habits in their chronic pain patient population, and what is the efficacy of this type of treatment?*

Thematic analysis was utilized for data analysis in this study. Using this method allowed for a coding process to help connect data collected from the seven interviews (Braun & Clarke, 2012). According to Braun and Clarke, thematic analysis allows for "themes to be analyzed and described according to what is found within the data" (p.26).

Sample

Participants for the study were chosen using purposeful sampling. This type of sampling allowed the researcher to select participants who specifically met the study criteria and who were able to provide the information needed to conclude this case study. Selecting physicians for this study involved compiling a list of doctors, using publicly available data via the Internet, who recommended a whole foods plant-based diet as a treatment modality within the United States. The researcher contacted potential participants by sending the requirement letter through an email. A total of seven physicians participated in this study. Each physician interviewed was considered an individual unit of analysis within an overall thematic approach to examine patterns of physicians' experiences. The participant sample was semi-diverse in gender

representation with two female and five male participants. The first criteria required that the physicians practiced in the United States at the time of this study. This allowed the researcher to obtain data in a localized demographic. Next, participants were required to be currently or previously prescribing plant-based diets as first line of treatment for chronic disease. All participants were board certified. The participants were required to be over 18 years of age and sign an informed consent agreement sent by the researcher via DocuSign preceding the interview.

Data Collection

The research was conducted following the data collection process outlined in Chapter III. Data collection included digitally recording the interviews. In addition to audio recordings, written notes to document participants' main responses to questions. Interviews were conducted until saturation of information was reached.

The interviews ranged from 39 minutes to 1:04 with an average interview length of 40 minutes. All interviews were conducted over a two-week period. The researcher used an Apple App on her own personal IPhone 7, TapeACall Lite, to record each of the interviews. They were than transcribed using an online uploading transcription service, HappyScribe.com, combined with manual transcription. The researcher organized the data by research questions to derive themes listed in the next section.

Data Analysis and Results

Several important themes were discovered based on content and word or phrase frequency. For this study, the researcher conducted seven interviews with a total of 18 open-ended questions. The researcher modified several of the questions and asked additional questions where obtaining further information was relevant or if the answers provided by the participants required clarification.

As every interview response was reviewed, the researcher developed a clearer

understanding of the experiences each physicians had when implementing plant-based diets as a treatment modality into their practice. Although the experiences of each physician varied, common themes were seen among all participants. Several themes emerged from the data. Seven overarching themes articulated the understanding of physicians' experiences in recommending a whole food, plant-based diet as a treatment modality for chronic disease, as presented in Table 1. The themes were as follows: nutrition education, discovery, severity of diagnosis, demographics and culture or patient, spousal resistance, prescribing diet, and solutions for the future. Each theme and subtheme is explained in more detail later in this chapter.

Table 1

Themes Based on Transcribed Interviews

Theme	Description
Theme 1: Nutrition Education	Hours required in medical school, alternative types of training obtained
Theme 2: Discovery	The process of interviewing patients on desire to change diet and behavior
Theme 3: Severity of Diagnosis	Relationship between severity and eagerness to adapt a whole food, plant-based diet
Theme 4: Culture/Demographics	Geographic location of physician and patient, and the effect on adapting diet modification
Theme 5: Spousal Resistance	The role spousal resistance has on the ease and willingness of adapting a change in diet
Theme 6: Prescribing Diet	Physicians individual protocol for prescribing whole food, plant-based diet and action plan
Theme 7: Solutions for the Future	Recommendations for future practice in medical schools, medical field, and generations to come

Evaluation of Findings

The findings from this study may help to bring awareness to physicians, organizations, and/or other related complementary and alternative practitioners, guiding them in helping patients make better nutrition choices for prevention and treatment of disease, encouraging optimum health. The research findings provide valuable experiences of physicians who implement a whole food, plant-based diet as treatment modality for chronic disease.

Theme 1: Nutrition Education

Nutrition education was the first theme revealed based on results from of the interviews. An overwhelming 100% response was given to this question in regards to the lack of nutritional education received in medical school. Most of the physicians' responses indicated they learned about nutrition and whole food, plant-based diet by reading on their own. Nutrition education was the first question asked by the researcher after the initial three introductory opening conversation questions:

1. Can you tell me a little bit about how your career has evolved, and what experiences led you to the path of a whole food plant-based diet?
2. Were there any influences motivated you to change from conventional medicine practice to an integrative practice?
3. How long have you been in practice?

"The China Study was just released at I read the entire book. This really made sense to me for the first time and I began adopting a plant-based diet" (P2). "I had the opportunity to just learn more and more about it but it was really on my own from just a reading of the medical literature" (P4).

Each of the seven physicians addressed the length of nutrition education being delivered in medical school. The unanimous response given by all seven doctors was

alarming but neither unexpected nor surprising in relation to the documented evidence found in the literature review.

> When I was doing rotations in medical school, I was in the hospital and in the clinics. I would say that I sat in on lectures by dietitians and they were teaching very conventional like FDA diets or the government sponsored diets in medical school. (P2)

> As far as nutrition education I really think the education I got was minimal in medical school and it was not particularly helpful; it was theoretical. What was the biochemistry of vitamin C because of the chemical structure of it. You know how it affects scurvy risk but nothing about a person with hypertension or diabetes and how you really change the diet in a worthwhile way and nothing about the kind of thing that would be helpful to a person with that cancer. (P4)

Other participants stated, "There is very little in the way of curriculum" (P5). "I think it's important that nutrition be integrated into medical school" (P6). Thus, these physicians articulated a clear need for current nutritional education to be included in medical school.

Theme 2: Discovery

The theme discovery was the second emerging theme and relates to the process used by the physicians to learn more about their patients to better understand how to implement and motivate change. The discovery process is a key part of building a relationship with the patient. During this process, the physician is able to learn the patients' needs, barriers, goals and requirements. By taking the time to ask questions and learn from the patient, the physician is building a trusting relationship leading to the desired behavior change. The following four questions all related to the theme of discovery which is the process of uncovering a patient's why.

1. Can you share with me an effective method you have used to counsel individuals and groups on good nutrition, eating habits, and/or nutrition monitoring?
2. Are there specific approaches you take with your patients that you feel make you unique or different?
3. What do you believe has helped you to inspire change with your patients?
4. How have you been able to maintain change over time?

Participants' responses follow:

> I try to identify goals and triggers like grandkids and things they love to do now, I need to do that. They can change their diet. I spend a little more time with patients. Yes I, I think you really get to know them by having that trust in you and its really kind of looking out for their best interests not just handing them a piece of paper with a prescription on it as to what to do. (P1)
>
> I don't preach to my patients, I spend a ton of extra time with them. Every single time they come in. I have learned that when you tell them here is what you have to do they don't listen. Instead I ask them a lot of questions, really take the time to get to know them and their story. (P2)
>
> I want to learn more about my patients and not just by gathering information. Also by realizing you have to really get to know your patients and work different angles for each one by meeting hem where they are. (P6)

Thus, the physicians articulated it was important to take time to build a relationship with the patient first, in order to prescribe a successful lifestyle change.

Theme 3: Severity of Diagnosis

The theme severity of diagnosis or disease relates directly to the Health Belief Model and was a theme recognized by all seven of the participants as the top motivator for adapting a whole food, plant-based diet. For anyone, a severe diagnosis can be both shocking and frightening. The more severe a diagnosis, the more likely a person will view it as a warning sign that they are at risk that could cause them considerable harm. That is, for example, when a patient has a wake-up call, they are more likely to be open to learning about and adopting a change of diet and lifestyle.

The following questions and the physicians' respective responses addressed the conceptual theory of the Health Belief Model used in this study:

1. What specific challenges and barriers do you experience when prescribing a plant-based diet and how have you been successful handling patient resistance during the process?

"So the number of people that are changing is bigger than ever before but the great majority of people are still ruled by preexisting habits that are increased by industry messaging and their own actions" (P4).

> You know I always hear that it's cheaper to buy junk food in most places. They're starting the changes on that. But I do see that as being a resistance as well. The problem with this junk food is that it's designed appeal. So this really is an area of intense interest and concern for the medical community particularly our nutrition group and our American Medical Association. (P5)

"Top three reasons people can't follow diets: 1) Too hard, 2) spousal support (very hard when the other spouse sabotages health plan, 3) Implementation" (P5). "This is what we were raised with, this is what we do just because our parents told us" (P7).

Another big barrier is just the general lifestyle of being over scheduled if there's

two people two partners in the family both of them working crazy hours getting home late at night. You really have to put effort into arranging your schedule planning and all of that. (P7)

1. Does the severity of their diagnosis or disease seem to influence their adoption to a whole food, plant-based diet?

The biggest thing you can do is plant based diet and increasing fruits and vegetables in your diet. Those who might actually lower your blood pressure. That's probably the number one thing that ends up in the conversation because we have very few patients in cardiology who do not have hypertension or can say most of your population is probably already coming to you with heart issues or heart problems so probably a little bit more open or had some experiences that might change their thought process.

As far as maybe scaring them into kind of listening you know versus just the general population going to their general practitioner. Yes well here is what you're really referring to is that every cardiac teachable moment it's an opportunity for someone to look at what they've done to get into this situation. And we have to take advantage of that crisis in the person's life in terms of moving them. And so the thing that used to happen is that patients would come in have a heart attack get treated with drugs and medication and told to follow up with cardiac rehab and lower the fat in their diet. And there is that incomplete approach never leaves them with what they really need to know. Point one you had a heart attack because your arteries were blocked into your arteries were blocked because there was cholesterol buildup in the air we breathe. (P5)

"He had another heart attack at he said Ok that's it, I'm not doing this anymore. And he's been trying ever since. It gave him his is a wakeup call" (P7).

Theme 4: Culture/Demographics

This theme relates to how differences in both culture and demographics can have a profound effect on dietary and nutrition habits. The question, *What specific challenges and barriers do you experience when prescribing a plant-based diet and how have you been successful handling patient resistance during the process?* brought the following responses: "I think we get a lot of snowbirds in the winter and it's like a lot of meat and potatoes kind of people. So I think we're talking about adaptation" (P2).

> But in addition especially in cities out there not having access to stores you don't have good food…. When we try to change the diet we're actually interfering with culture their own personal taste at the bad habits developed over decades. Their family atmosphere and habit. Their neighborhood, their church and challenging all of that. So it does take a completely different approach. The most important thing to recognize is that behavioral change is key. Without it you're not going to be successful. And that's true whether you're talking about changing a diet or having someone do an exercise program. (P5)

> Well, you can see demographic differences of course and good for example by the same mortality rate or incidence rate for particular for type 2 diabetes and obesity. So they vary fairly significantly around the country. So there's differences, I think Georgia is one of the highest producers of chicken poultry in 50 states. (P7)

Although six out of the seven physicians felt demographics and culture played a huge role in lifestyle medicine and dietary change, there was one contrasting view that needs to be considered as a new way of looking at overcoming these objections with patients:

> Regardless of how old they are or what race they are, they will explore and try different things see what things they like. So my father hated spicy food love

> spicy food. So I encourage people to completely ignore those things and allow the patients to make choices for himself or herself. (P4)

Theme 5: Spousal Resistance

One surprising theme, spousal resistance, was discussed in six out of seven interviews as a major factor for not being able to either start or follow through with diet modifications. It is noted that any time a spouse or individual takes on a major lifestyle change without the other, there is the potential for undue stress in the relationship. The participants of this study acknowledged a lack of spousal or family support as a barrier to adapting a whole food plant-based diet. "Top three reasons people can't follow diets: Too hard, Spousal support (very hard when the other spouse sabotages their spouse's health plan, Implementation" (P5). "It really is asking them to bring the spouse with them. I try to counsel them both together" (P7).

> So it just starts with them discuss the things you see what they want to do. If one is ready to make a change and the other is not, there is something that could help. You ask the spouse who's not so interested to just be supportive of the one who is. You've got to respect their desire to change. (P4).

Theme 6: Prescribing Diet

The interviews with physicians produced varied responses of how each doctor chose to work with their clients on recommending a whole food, plant-based diet. There was a consistent theme in both transparency with patients and the recommendation of several popular nutrition documentaries. Five out of the seven physicians stated they would spend extended time with their patients asking lots of questions and speaking candidly with them about personal dietary choices. Relationship building was an apparent mentioned key factor in building trust with patients. A few went as far as explaining to their patients the why behind making the switch to either a vegan or whole

food, plant-based diet. A few of the physicians give out their personal cell phone numbers and allowed their patients to text questions any time and/or check in to be held accountable for diet and lifestyle changes: "Well every patient no matter what their diagnosis will be encouraged to get away from animal products and to begin a plant based diet" (P4).

> I don't preach to my patients, I spend a ton of extra time with them. Every single time they come in. I have learned that when you tell them here is what you have to do they don't listen. Instead I ask them a lot of questions, really take the time to get to know them and their story. I tell them a lot about myself so they can believe I am doing this too. I have one patient who texts me as a check in and his wife thinks that's great. (P2)

One clinician began her explanation of how she initially begins the process by recommending key words for them to search for information over the Internet: *Forks Over Knives, What the Health, China Study, vegan festivals, conferences, podcasts, Chef AJ, support groups, accountability*.

Several others suggested one of the more responsive methods of appealing to patients is recommending documentaries: "I've had them contact me. I give everybody my personal cell phone number and say if you have a question about a recipe or where do I get this ingredient. Text me. Call me" (P7).

> Also sometimes movies can help a person who's thinking about going be getting a spouse who is dying to get it all. If they go and they watch the movie Forks Over Knives or What the Health on Netflix or whatever works to motivate them. (P4)
>
> My goal to present nutrition in such a way that people would understand that their health is in their hands and in their mouths. After I saw Forks Over Knives and heard Dr. Esselstyn speak in 2011, I was like oh OK I get. (P7)

All seven physicians shared a wealth of information on best practices for prescribing a plant-based diet as first line of treatment. Discovery is the leading predictor of success over time through building a trusting relationship with patients. There are also many tools available for physicians to use as an introduction to lifestyle change.

Theme 7: Solutions for the Future

As the number of individuals diagnosed with chronic disease rises in our country, the need for studies on alternative methods of treatment is necessary to reduce this epidemic. The theme solutions for the future emerged from the following question: *What is the future of whole-food plant based nutrition?* Each of the seven physicians discussed the need for further education in nutrition schools and increased awareness in our society in regards to a whole food, plant-based diet as first line of treatment to reduce excess prescription medication and illness. As a result of this emerging awareness, the medical field could potentially shift its focus from treating the symptoms of disease to prevention. "It really is asking them to bring the spouse with them. I try to counsel them both together" (P5). "I mean I have a fantastic job but my passion really is in basic nutrition and spreading the message" (P7).

> I can't wait to read this paper because I want to learn more not just gathering information but about realizing that the patience is that you really have to work your angles different with different patients and kind of meet them where they are good. But really it's just kind of just educating people. (P2)
>
> Well we're headed in two different directions the one direction is that there are more people following a healthy diet than ever before and meat consumption has been dropping fairly consistently for the past decade or so. Health food stores have exploded. They are now enormous with lots and lots of people becoming either semi-vegetarian or vegetarian or vegan. That's all good. However the

> broader population is in the worst health that we have ever seen on this planet. And apart from what's happening in Asia and Europe and just about everywhere else. So the number of people that are changing is bigger than ever before but the great majority of people are still ruled by preexisting habits that are increased by industry and their own actions. (P4)

> It means going back to your roots because a lot of the older generation that I see they grew up eating grains and they might have meat on the weekend after Sunday church or something but they grew up eating very simply from the garden where they grew and they couldn't afford much else. And I think it's our younger generations that have this unlimited access to asked garbage food that are really paying the price. I think take getting back to the way our grandparents lived. (P7)

Key Findings and Recommendations for Practice

The purpose of this project was to examine experiences of physicians who implement a whole food, plant-based diet as a treatment modality for chronic disease. While all of the physician participants in the study discussed aspects of their experiences in recommending a whole food, plant-based diet as treatment modality for chronic disease, each individual case study analysis revealed they shared very similar stories and experiences. The majority of the seven participants in the study shared the following characteristics. They all attended medical school to practice conventional medicine. The majority of participants adapted a whole food-plant based lifestyle due to personal and or family health experiences. Although all of the physician participants had minimal nutrition training in school, they all sought to increase their knowledge through taking additional certification courses, attending lectures, reading books, and learning through podcasts and documentaries. The participants shared a common theme of promoting healthy behaviors both in disease prevention and medical care.

The following recommendations for practice have been made based on the learning objectives that were discovered during the interview process of theme analysis of this applied doctoral project:

- Understand the importance of nutrition and health through education and training regarding a healthy diet. Comprehensive education in healthy living skills like making healthy eating choices and managing stress.
- Use personal inspiration to instill positive social change by using the information gathered from physician's experiences to develop an intervention plan that will lead to the implementation of a healthy diet. Physicians have limited hours of training in medical school. Most found their inspiration to change during personal experiences, which have helped them to create their own stories of success.
- Physicians' health practices strongly influence patient health practices. The vast majority of patients relied on their general practitioner as their primary and most trusted source of health information. Patients found inspiration in learning from a physician who practiced what they preached. Most patients were more likely to follow advice of a physician who modeled the behavior and understood where the patient was coming from.
- Set the agenda for patient's visit, create the opportunity to talk about diet, exercise and weight with the patient, and assess patient readiness to make weight-related behavioral changes. Many patients faced obstacles that proved to be a challenge in adopting healthy behaviors.
- Use stage-matched counseling strategies to move patient closer to making behavioral changes. Help patients establish goals for diet, exercise and weight.

- Get to know a future patient on the first visit can be absolutely key in guaranteeing a higher rate of success in making lifestyle changes. Physician's need to learn how to take must take time to build a relationship with their patients by earning their trust and understand a patient's why.
- Place emphasis on the role of the discovery process to help achieve positive engagement outcomes through listening and understanding, which will likely help to achieve positive outcomes.
- Understand the fundamentals of health behavior change (severity of diagnosis). Patients are more likely to adopt healthy behavior when they feel the extent of discomfort or harm a diagnosis has will have an effect on their wellbeing.
- Gather family, social, and physical history assessment through intake.
- Ask permission by engaging patients in their care to increase the likelihood they will become more involved and informed about their health.
- Assess patient's BMI and dietary patterns.
- Assess the patient's health goals and risk/readiness to change using motivational interviewing (MI) as a tool to promote behavior change. Use this evidence-based collaborative method of selectively focusing on statements made by the patients to motivate behavior change.
- Discuss with the patient their previous diet changes and physical activity attempts. These areas should be taken into consideration when devising a treatment plan.
- Discuss patient's challenges and barriers by addresses areas of concern. Allow the patient to self-reflect and give input into the conversation.

Asking the patient to give input into the conversation enables them identify and discuss areas for improvement. According to the Health Belief Model, perceived barriers is one of the top reasons people foresee difficulty in adapting change.

- Agree on specific health goals and plan of action by making sure the goals are SMART specific, measurable, achievable, realistic, and time sensitive. Be supportive of the goals given.
- Create a specific written Lifestyle Plan for the patient identifying both realistic short-term and long-term goals, including manageable steps that are specifically defined and can be measured.
- Make recommendations on specific tools and support services, including either professional, group counseling, community, or family. Have the patient identify their support system. Social support can also include group exercise classes and personal trainers. Social support services will help strengthen resilience and commitment.
- Provide patients with email, text, and phone information that will provide accountability which can include smart phone apps.
- Provide a list of additional resources including recommended documentaries, books, podcasts, smart phone apps
- Discuss and schedule frequent monthly follow-up visits with the patient to evaluate the goals
- Spousal support is key to identify and address resistance to change. When one spouse wants to make a change but the other wants to keep things just the way they are, and this creates a lot of tension. Invite spouse to the appointment. Explain the importance of diet change on health and

the steps. Ask for their helping in supporting partner in new lifestyle changes

- Discuss the role culture and demographics play as a barrier. Understand the relationship between culture, lifestyle, and health is a key component to patient care.

The following additional documentaries were recommended by the physicians:

Food Matters (2008)

Forks Over Knives (2011)

Vegucated (2011)

What the Health (2017)

Plant Pure Nation (2015)

The following books were recommended by the physicians:

China Study (T. Colin Campbell)

Whole (T. Colin Campbell)

Prevent and Reverse Heart Disease (Caldwell Esselstyn, Jr.)

Engine 2 Diet (Rip Esselstyn)

The Plant-Based Solution (Dr. Joel Kahn0

The Cheese Trap (Dr. Neal Barnard)

Eat to Live (Dr. Joel Furhman)

Super Immunity (Dr. Joel Furhman)

How Not to Die (Dr. Michael Gregor)

The following Smart phone apps were recommended by the physicians: Fitbit

Map My Run

My Fitness Pal

Fooducate

Implications for Practice

The lack of education and practical skills taught in medical school must be addressed. Teaching medical professionals alternatives to prescribing diets over medications as first line of treatment could both prevent and reverse disease in our country. The current study was the first step to uncovering a gap between the presented literature and overwhelming response of need that was documented throughout the seven interviews. This study was completed as a first step to making changes in medical practices. Additional questions should be included in future studies.

Recommendations to achieve lasting change include the continuation beyond this study to interview as many plant-based physicians as possible and continue to fill the gap between curriculum and implementation into practice. There also needs to be changes in attitudes and understanding amongst the broader public. Physicians need to be taught how to implement change into practice and the tools to motivate their patients to adapt change successfully. The body of evidence for the value of change in dietary patterns and nutrition as medicine is enormous. Key examples of evidence supporting these approaches emerged throughout the literature review and interview process. The researcher is proposing that a plan must be constructed for continuing education in medical school; practice tools, including literature and recommendations for change; support, including motivational interview techniques; behavioral modification suggestions; and evaluation, including methods for testing and documentation.

Limitations of the Study

This research study has several limitations from a sampling standpoint. The researcher recruited most of the participants through a list of plant-based physicians within the United States. Through multiple attempts to contact additional participants, eight of the ten accepted the invitation to participate in the study, and one call was

cancelled the day of the interview. The sample size of seven physicians proved to be an appropriate number of interviews for the case study reaching saturation. Out of the seven physicians, only two were female participants, which may have limited the findings and generalizability for this study which also leads to further recommendations for research. Since the study was explorative in nature, the results were limited as the findings cannot be generalized to the entire medical field, which makes it slightly difficult to generalize across the overall population of physician leaders.

Another limitation that might affect the study is geographic location of both the patients and the physicians' practices. Participants and cultural dietary practice in a particular region can have a difference of food availability and preferences. The researcher asked each participant their experience with prescribing plant-based diets in their particular region to account for this. Additionally, this study was limited to whole food, plant-based diet physician practices located in the United States.

Recommendations for Future Research

Chronic disease continues to rise and is quickly becoming a national epidemic in the U.S. Although whole food, plant-based diets evidence is increasing, the results of this study will have the potential to contribute to positive social change through the promotion of implementing whole food, plant-based diets into physician-based medical practices. The study's results may inform a broader population of health practitioners of the benefits nutrition has on preventing and or reducing chronic disease. Educational implications might lead to the awareness and reconsideration of standards requiring the number and type of nutrition classes offered in medical school. The additional insight that this study will hopefully provide to the participants is extremely important given the documented research on whole food, plant-based diets. Recommending a whole-food, plant-based diet as first line of treatment is becoming increasing clearer as new research is being published

and numerous documentaries released to the public.

The following recommendations below would allow for further research in the area of plant-based diets and treatment for chronic disease:

1. Determine factors in-depth for why these physicians chose to follow a whole food, plant based diet. Physicians have the ultimate decision on lifestyle they use personally and recommend. Overall, these factors can be helpful in determining how to appeal to a larger audience.
2. Building a survey to understand the attitudes and level understanding among non-participating medical providers. A possible instrument would be a survey built designed through survey money using the results of this study to assess clinician's attitudes toward integrative medicine based on education, understanding, and a desire to integrate whole food, plant-based diets. This survey would help to better understand the level of knowledge across a broader demographic of health care professionals. It would also serve as a gauge to understand the needs of research and development for nutrition education in medical school. These finding may also help determine the best methods needed to improve the overall level of understanding of nutrition recommendations medical practitioner's use in practice.
3. Taking a deeper dive into exploring techniques used to motivate patients through behavior modification according to the Health Belief Model theory and best practices and protocols for implementing a plant-based practice as suggested by several of the physicians interviewed.
4. Extend this study into areas of clinical research to include the benefits of a whole food plant-based diet on specific diagnosis of chronic disease. The main reason behind this study was driven by the lack of literature exploring the

effects of a whole food, plant-based diet on patients. It would be meaningful to include these findings in medical training programs when learning about each specific disease and best course of action.

Conclusion

The results of this research concluded with a vast majority of consistency among the seven physicians interviewed in regard to implementing whole food, plant-based diets in their practice. This study implemented a qualitative case study design, guided by one overarching research question and sixteen supporting sub-questions. Seven overarching themes articulated the understanding of physicians' experiences in recommending a whole food, plant-based diet as treatment modality for chronic disease. Implications for practice included recommendations for future research and implementation.

Overall, it is clear that physicians practicing in the U.S. can help their patients make significant lifestyle choices that impact their health and well-being. Assisting current doctors and those being trained on how to do this is probably the single most important change the U.S. health industry could ever experience.

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Appendix A: Recruitment Letter

Hello, my name is Jennifer Reinert, and I am writing to ask if you would allow me to tap into your expertise and experience.

I am a graduate student at the University of the Rockies in Colorado Springs, Colorado; my dissertation topic is the use of a whole food, plant-based diet as treatment modality for chronic disease.

I am seeking 10 physicians who have experience integrating nutrition in their medical practice and am writing to ask of your interest in being a part of my research.

Participation requires a phone interview with myself so that I may ask about your experience of recommending dietary changes to your patients.

If you would like to participate, please simply reply "YES" to this email and I will send you a detailed consent form that you may sign electronically. Once I receive that, we can schedule the interview at your convenience.

If you have and questions I can be reached at [redacted]

If you have questions regarding your participation in the study, or if you want to verify the authenticity of the study, please contact Dr. Heather Frederick, my faculty advisor at: [redacted] or the University of the Rockies chairperson of the Institutional Review Board at [redacted]

If for whatever reason you are not interested in participating, but know colleagues who would be, please feel free to forward my email to them.

Thank you for your consideration,
Jennifer Reinert

Appendix B: Informed Consent Document

Experiences of Physicians Who Implement a Whole Food, Plant-Based Diet as Treatment Modality for Chronic Disease**s**

You are being invited to participate in a research project conducted by Jennifer Reinert, a health and wellness psychology doctoral candidate at the University of the Rockies.

This research project will explore physician's perceptions of their experiences using a whole food, plant-based diet with patients, as a treatment modality for chronic disease. This applied project will include interview responses of 10 physicians throughout the United States collected via a phone interview. A set of interview questions will be used to gain relevant knowledge about the topic. The interviews are estimated to run approximately 30 minutes in length.

Participation in this study is purely voluntary and there will be no compensation. You are also free to withdraw from the study and have the right to discontinue participation at any time, for any reason, and without penalty for doing so. You also have the right to decline to answer any of the interview questions.

There is no direct benefit to participating in this study. However, the indirect benefit of participating is helping to bring awareness to physicians, organizations and or other related complementary and alternative practitioners and to guide them in helping patients make better nutrition choices for prevention and treatment of disease, encouraging optimum health.

There are minimal known risks to participating. While there is always some risk to participating in a research study, the risks anticipated for this research are not any greater than one would experience in everyday life. For example, there may be some inconvenience experienced due to the time spent participating in the interview, or there may be some discomfort experienced during the interview if any questions bring up past negative experiences working with patients and dietary change. Given the interview questions do not explore sensitive topics and the study's procedures are outlined in the informed consent process, no debriefing will be conducted.

The data will be collected via telephone interviews from the privacy of the researcher's home office. The interviews will be recorded to provide an accurate account of each individual physician's experience. The researcher will transcribe the recorded data. The transcripts will not be included within the appendices of the dissertation document. Digital recordings will be destroyed by the researcher when the final dissertation document is approved by the University.

The final presentation will include a narrative combined from interview content, using direct quotes as needed to highlight important themes. Note that names will not be used; each participant will be given a code number.

The electronic consent forms, notes, and transcripts will be kept on a password protected external hard drive in a locked cabinet in the researcher's home office for a minimum of 5 years and then destroyed.

The only people who will have access to the responses will be the researcher, dissertation chair, and or Institutional Review Board (IRB).

If you have any questions regarding this study, you may contact the researcher at [redacted].

If you have questions regarding your rights as research participant or any concerns regarding this study, you may report them – confidentially, if you wish – to Dr. Heather Frederick, my faculty advisor at: Heather.Frederick@faculty.rockies.edu, or the University of the Rockies chairperson of the Institutional Review Board at [redacted]

I have read and understand the above information and voluntarily consent to participate in the research. I agree to take part in this study as a research participant. I further agree to the uses and disclosures of my information as described above. With my signature I affirm that I am at least 21 years old and that I have received a copy of this Informed Consent form to keep.

Signature of Participant: _____ Date: _____

IRB Approval Number: IRB 18-057-O IRB Expiration Date: 07/01/2019

Appendix C: Interview Questions

1. What experiences led you to the path of a whole food plant-based diet?

2. Were there any influences motivated you to change from conventional medicine practice to an integrative practice?

3. What specific types of nutrition education or other training (in the past or on-going) have you participated in that supports your protocol of prescribing a plant-based diet?

4. Do you feel there is enough training offered for doctors in medical field?

5. What do you feel the solution is?

6. Are there specific approaches you take with your patients that make you unique or different?

7. What do you believe has helped you to inspire change with your patients?

8. How have you been able to maintain change over time?

9. How have you been successful handling patient resistance during the process?

10. How do you measure progress in your practice?

11. What types of medical testing do you prescribe if any?

12. In you experience, what specific challenges and barriers do you experience when prescribing a plant-based diet?

13. In your experience, has the patient's perception of susceptibility of getting a disease influenced their adoption of a whole food, plant-based diet?

14. In your experience, has the patient's perception of the severity of their disease influenced their adoption to a whole food, plant-based diet?

15. In your experience has the patient's perception of the benefits of eating a whole food, plant-based diet influenced their decision?

16. What is the future of whole-food plant based nutrition?

17. Is there anything else you would like to add?

Appendix D: Modified Interview Questions

1. Can you tell me a little bit about how your career has evolved, and what experiences led you to the path of a whole food plant-based diet?

2. Were there any influences motivated you to change from conventional medicine practice to an integrative practice?

3. How long have you been in practice?

4. What specific types of nutrition education or other training (in the past or on-going) have you participated in that supports your protocol of prescribing a plant-based diet?

5. Do you feel there is enough training offered for doctors in medical field?

6. What do you feel the solution is?

7. Can you share with me an effective method you have used to counsel individuals and groups on good nutrition, eating habits, and/or nutrition monitoring?

8. Are there specific approaches you take with your patients that you feel make you unique or different?

9. What do you believe has helped you to inspire change with your patients?

10. How have you been able to maintain change over time?

11. How do you measure progress in your practice? What types of medical testing do you prescribe if any?

12. What specific challenges and barriers do you experience when prescribing a plant-based diet and how have you been successful handling patient resistance during the process?

13. Do you feel that a patient's perception of susceptibility of getting a disease influenced their adoption of a whole food, plant-based diet?

14. Does the severity of their diagnosis or disease seem to influence their adoption to a whole food, plant-based diet?

15. In your experience have you noticed the patient's perception of the benefits of eating a whole food, plant-based diet influenced their decision?

16. What would you say is your main achievement in taking a stand against the standard American diet?

17. What do you see is the next step to improving the conversion of a whole food plant based diet for future generations?

18. Do you have any questions for me or anything additional you would like to add?