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A Whole-Food Plant Based Diet and its Effects on Cardiovascular Disease

Meredith A. Childress

University of Texas at Tyler, MChildress6@patriots.uttyler.edu

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A Whole-Food Plant Based Diet and its Effects on Cardiovascular Disease

A Paper Submitted in Partial Fulfillment of the Requirements

For NURS 5382: Capstone

In the School of Nursing

The University of Texas at Tyler

Meredith Childress

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Executive Summary

Cardiovascular disease (CVD) is the number one cause of death globally, taking an estimated 17.9 million lives every year (WHO, 2021). The Center for Disease Control and Prevention, (CDC) (2020), reports heart disease is the leading cause of death for men and women, regardless of racial or ethnic background. In fact, one person dies every 36 seconds in our country from cardiovascular disease, which totals about 655,000 Americans per year; and equates to one in every four Americans die of poor cardiac health (CDC, 2020). People at risk of heart disease may have any of the following conditions: family history of heart disease or stroke, tobacco use, elevated blood pressure or a diagnosis of hypertension, high cholesterol, and obesity, which can all be identified by a primary care provider in one to two visits (WHO, 2021). The estimated annual cost of cardiovascular disease in the United States was \$351.2 billion in 2014-2015, with \$213.8 billion in direct cost, including 46% of that for inpatient care (AHA, 2019). In adults alone, almost 40% living with cardiac disease are also obese; if we were to include adolescents in that statistic, the number jumps to just under 60% (AHA, 2019). Amid known risk factors associated with heart disease, dietary choices are one of the single-most important implications for this diagnosis. Promotion of and adherence to WFPB nutrition can greatly change the trajectory of a patient's illness which validates the importance of this change project. There is progressive data demonstrating a WFPB diet is associated with benefits on cardiovascular health and decreased mortality risk. This project can improve patient outcomes, save lives, promote health and wellness, and decrease healthcare costs associated with heart disease.

A Whole-Food Plant Based Diet and its Effects on Cardiovascular Disease

The purpose of this paper and benchmark study is to present evidenced-based data regarding the impact diet choices have on heart disease and how adherence to a whole food plant based (WFPB) diet compared to a Western diet affects cardiac disease. The PICOT question being asked for this change project is as follows: In adults with history of cardiac disease (P), how does adherence to a whole-food plant-based (WFPB) diet (I) compared to the Western diet (C) impact outcomes associated with coronary artery disease (CAD) (O) over three months (T)? A search of evidenced-based literature was conducted to determine the positive outcomes associated with abiding by a WFPB diet while living with heart disease.

Rationale for the Project

In my practice setting, patients want answers on how they can improve their health and reverse or slow disease progression, whereas the stakeholders (employer) want healthcare associated costs to decrease such as emergency room visits, hospitalizations, and medications. How can we help patients and stakeholders at being successful with both desires? We have known for decades that the vast majority of atherosclerosis diagnoses and associated morbidity and mortality are influenced predominantly by diet and lifestyle (Hever & Cronise). As the evidence shows, diets higher in plant foods and lower in animal foods were associated with a lower risk of cardiovascular morbidity and mortality in a general population (Kim et al., 2019). Change is warranted because although the data has been around for many years, healthcare providers are not using the data to support how they practice and treat chronic conditions that are primarily caused by diet alone, including hyperlipidemia; hence the rising healthcare costs, polypharmacy, and increased cardiovascular procedures. Healthcare is advancing, but the number of lives affected by detriments of CVD is not decreasing.

Literature Synthesis

Guided by the PICOT question, a systematic literature search was conducted. The databases searched were CINAHL, PubMed, and Cochrane Database of Systematic Reviews (CDSR). Keyword and controlled vocabulary searches included the following terms: *plant-based cardiac diet*, *plant based cardiac*, *plant-based diet and cardiac disease*, *cardiac risk* and *diet*. All keeper study articles selected include a case report, systematic review, descriptive design, randomized controlled study, and qualitative research. Chosen studies are in the English language and less than five years old.

Selected articles for this review had similar evidence confirming improvement in outcomes related to the effectiveness of a WFPB diet in cardiovascular patients. Two systematic reviews concluded a reduced risk of coronary heart disease (CHD) and stroke reduction by increasing fruit and vegetables in the diet (Aune et al., 2016 & Betchold et al., 2017). Four studies evaluated specific outcomes of heart disease including BMI, cholesterol, and blood pressure; all of which showed a reduction in disease supporting a WFPB diet (Allen, 2019; Bechthold, 2017; Morin, 2019; Wright, 2017). A qualitative and quantitative study declared a twofold weight loss with plant-based foods vs any other diet, supporting the change to prevent cardiovascular disease by reducing obesity as well (Morin et al., 2019). The random control trial was chosen based on its investigation of effectiveness within a community following a WFPB diet program, which included people ages 35–70, from one general practice in Gisborne, New Zealand (Wright et al., 2017). All participants were diagnosed with obesity or overweight and at least one of type 2 diabetes, ischemic heart disease, hypertension, or hypercholesterolemia; of 65 subjects randomized (control n=32, intervention n=33), 49 (75.4%) completed the study to 6 months; twenty-three (70%) intervention participants were followed up at 12 months (Wright et

al., 2017). The conclusion of this program led to significant improvements in BMI, cholesterol, and other risk factors while the research also stated it achieved greater weight loss at six and twelve months than any other trial that does not limit energy intake or mandate regular exercise (Wright et al., 2017).

A sequential, explanatory, mixed-method, research design was used to determine the conclusion that a WFPB based nutrition program does improve cardiovascular health in adults and features characteristics that may inform future nutrition programs and public health interventions (Morin et. al., 2019). A descriptive design demonstrated a WFPB lifestyle is associated with benefits of cardiovascular health and weight loss with a reduction in co-morbid conditions and mortality (Kim et al., 2019). According to Bechthold (2019), following a plant-based diet proved a 65% reduced risk of CHD and 40% stroke reduction. Of five studies evaluating coronary heart disease, all five positively showed reduction in cardiac disease based on outcomes including BMI, cholesterol, blood pressure, and coronary heart disease. Three studies that specifically evaluated cholesterol, all showed improvement in lipids. Morin (2019) declared two-fold weight loss with plant-based foods vs any other diet, which also proves to lower cholesterol and heart disease. Allen, Gumber, and Ostfeld (2019) showed evidence of reversing type 2 diabetes mellitus, improved quality of life, and improved cardiac function in less than six months. This change project can continue to improve patient outcomes by highlighting facts associated with evidence supporting the advantages of a WFPB diet. See Appendix A for Synthesis Table.

Project Stakeholders

The location to implement this change project is unique to what one may think of as a practice setting as it is not a traditional brick and mortar site, but a remote value-based care

(VBC) company. Conifer Health Solutions (2022) collaborates with large corporations wanting to decrease healthcare costs of the employees by providing an individualized approach to population health management engaging high-risk members to promote primary care utilization. Stakeholders affected by the change would include Conifer's contractual promise to achieving set goals and objectives by a corporation (employer), the administration and nurses at Conifer providing the medical management program, and the patients receiving the educational information with improvement in their cardiac health, decreased medical costs, and ultimately a return on invest for the employer which contracted Conifer Health Solutions. Indirectly affected includes the healthcare facilities, healthcare providers, pharmaceutical industry, insurance companies, and patient families and caregivers.

Implementation Plan

To implement change, our greatest challenge — and perhaps most vital task — is communication. Every step of the way, from patient intake to patient discharge and beyond, nurses must communicate well to provide comprehensive care (The University of Mexico, 2016). The plan for this benchmark proposal is to implement transformation in the education process to patients by promoting evidenced-based data on benefits of WFPB nutrition and CVD. A shared vision is important in getting everyone on the same page. We will ensure the vision is clearly communicated and offer guidance to staff on how to support their patients in successfully utilizing nutrition to improve their health. All studies selected for this change project mention implementing some sort of policy or further research regarding education surrounding nutrition for these particular patients. Specifically, the new education policy implemented in the pilot program will pertain to everyone. All staff, including the administrator, clinical coordinators, managers, nursing staff, and physicians, will be made aware of the new policy. There will be

education and simulations regarding the new policy, along with generalized information related to implementing this change going forward and how we will track and measure outcome variables. It's also imperative we have a clinical support group for questions and various concerns that may come up on a case-by-case basis. Ultimately, the implementation of this change will require leadership support and solid communication. The model for evidenced-based practice changes that guides clinicians through steps to complete the EBP process identifying key components while promoting a structured approach is the Iowa model; its design is to support evidenced-based healthcare by following a problem-solving method while being useful in practice (Melnik et al., 2019). This is an optimal guide to the change project as it allows for identification of a problem (heart disease), analysis of that problem to identify a root cause (diet), and then forming a pilot study to implement change based on evidence.

Educational protocols are already currently in place for the nurses to reference while providing various education to patients. We have an internal database where approved education information is downloaded and then disseminated to patients based on whatever conditions they have or specific requests. All employed nurses of Conifer can go into the database, type a disease within the search bar, and easily find information; however, the issue is that not all topics or diseases are covered including WFPB nutrition, nor its benefits on various illnesses or health in general. Nurses can utilize this database as much or as little as they want for their individual patients and email this information as attachments or send it via postal mail but there is a 4-page limit on postal mail. A technological advance to assist in capturing appropriate patients is to initiate an automatic alert or red flag once a patient is identified by the system with heart disease, or high cholesterol, etc. to provide a WFPB nutritional bundle of information to the patient. The alert would serve as a reminder to the clinician.

Finally, protocols should be utilized across the company to ensure a streamlined approach and to ensure that all patients are getting adequate care with the patient's best interest in mind, even with something that seems as simple as education on nutrition but can truly have the biggest impact if dispersed appropriately.

Timetable/Flowchart

Timeline:

- Phase 1: Engage stakeholders and staff (1-2 weeks)- Obtain approval from stakeholders and share the vision for success with staff and other personnel via town hall meetings and gain buy in.
- Phase 2: Establishing a team and modifying the database (2 weeks)- A team will need to be established for various assignments within the pilot program including gathering data to serve as a baseline for medical spend, and modifying the existing database warehouse for approved education, and design alerts to help identify potential patients to enroll in the pilot and remind clinicians of the educational bundle which will need to be developed as well.
- Phase 3: Action Phase (12 weeks)- Identify patients that meet qualifications for pilot program with diagnosis of HLD and/or CVD and move forward with implementing pilot program for twelve weeks.
- Phase 4: Data Collection (1-2 weeks)- Conduct nurse and patient interviews to obtain information on patient reports of improvement in quality of life, satisfaction of lifestyle changes, as well as numeric data such as lipid panel, weight, BMI, and blood pressure over a period of three months. Keep record of the following data: hospitalizations and ER visits related to cardiac disease, newly started, or stopped medications related to cardiac

disease, any new symptomatology reported by patients with relation to cardiac disease specifically.

- Phase 5: Evaluate Outcomes (ongoing)- Ongoing review and trending of outcomes., analysis of all measurable data and refine practice processes as necessary.

See Appendix B for flowchart.

Data Collection Methods

Ultimately, permission is needed from Conifer Health Solutions to obtain the data mentioned above via their company-owned software and data feed. This also involves discussion with clinical directors and managers to champion the project and implementation process who potentially serve as the gatekeepers. The same data that was obtained to initiate the program in the implementation phase will be the same data evaluated at the end of twelve weeks; however, we would also include the number of cardiovascular patients that were engaged in the pilot program so we had a better idea of how many lives were affected as well as their starting and ending lipid profile, BMI, waist measurement, weight, blood pressure, and hgb1c if applicable will be important in determining success rates. Administration or other personnel will gather data on cardiac patients via insurance claims within the company data warehouse which include tracking hospital admissions and ER visits related to cardiac complications, recording cardiac medication costs, and any discontinuation of medications and compare cost of healthcare prior to and post study.

Cost/Benefit Discussion

Something always considered in establishing new protocols or adding to an established protocol is cost. Fees should be minimal or none considering this is purely education to patients and the database already exists. Approved evidenced-based data regarding plant-based diets

could easily be added to this database by the clinical education department. No new protocol would be needed, but the new information regarding WFPB diets being available in the database, and its benefits or effects on heart disease should be provided to the staff timely so it can be utilized as soon as possible.

Additionally, monetary savings could be astronomical for the client and life-changing for the patients. Minimizing apprehension and barriers related to cost of this change project can be accomplished with data obtained from the internal warehouse including cardiac associated medical spend from insurance claims and positive outcomes presented within literature, as well as the absence of any safety or liability risks. Again, being a purely educational change project, it is important to note the low cost associated with this intervention and consider the relative benefit to the patients which is priceless. A WFPB diet can be supported by stakeholders, providers, and policy makers encouraging weight loss, and health and wellness overall (Wright et al.,2017). If the project is not enacted, the organization can still promote a WFPB diet to its patients by inviting them to view documentaries, websites, or read articles with evidenced-based data on benefits relating to cardiac health.

Discussion of Results

This project is unable to be officially implemented due to shortage of staff and multiple current leadership changes. Defining success of the process change once implemented will be rather straight-forward. We expect to analyze all measurable data and refine practice processes as necessary. Welcoming feedback from staff and patients is also imperative, and a detailed survey will need to be dispersed via email and/or postal mail based on preference, as well as to patients engaged in the pilot program. At conclusion of evaluation, we would expect to see a decline in healthcare cost, less medication usage and prescriptions or decreased dosages,

less hospitalizations, ER visits, and acute medical office provider visits, with an improvement in quality of life, and overall feelings of health and wellness. Also expected is a decline in the numerical data previously mentioned; BMI, weight, waist measurement, blood pressure, hgb1c, and cholesterol levels. Finally, the patient's health improvement and satisfaction with this change is ultimately a quality indicator whether or not to continue past the 12-week pilot.

Conclusions/Recommendations

Adherence to a WFPB diet has shown significant improvements in various physiological factors associated with cardiac disease in our literature review. The research concluded nutrition is a major factor in CVD and mortality. Furthermore, an overwhelming amount of data continues to demonstrate the health benefits of a whole-food plant-based diet while confirming prevention and reversal of heart disease. My distinct recommendation is to allow people to make a choice with all the facts. Without awareness and understanding of life-changing benefits relating to WFPB nutrition and the impacts on their quality of life, is just simply not allowing them to choose. It is our responsibility as healthcare providers to learn more about treating, reversing, and preventing heart disease in a natural manner as opposed to overmedicating and putting a band aid on the underlying root cause. Healthcare providers should be utilizing this simple yet effective approach to promote health and wellness for their patients.

In addition, consideration for future nutrition programs and public health interventions promoting lifestyle medicine, which is applicable to all clinical settings, particularly those serving patients with heart disease or at risk for heart disease is recommended. It is imperative to change the way we think about dietary choices and learn how to provide a patient-centered approach on nutritional education for our cardiovascular patients demonstrating significant improvements in cardiac health, quality of life, and decreased medical costs.

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Appendix A

Synthesis Table**Synthesis Table: Impact on Outcomes**

Studies/Outcomes	1	2	3	4	5	6	Synthesis
BMI	↓	NE	NE	NE	↓	↓	<ul style="list-style-type: none"> Of the 5 studies that evaluated CHD, all showed reduced CHD.
Cholesterol	NE	NE	↓	NE	↓	↓	<ul style="list-style-type: none"> 3 studies that evaluated BMI, all showed weight loss.
BP	NE	NE	↓	NE	↓	NE	<ul style="list-style-type: none"> 3 studies that evaluated cholesterol, showed improvement.
CHD	↓	↓	↓	↓	↓	NE	<ul style="list-style-type: none"> 2 studies evaluated BP and both showed decreased BP.
							<ul style="list-style-type: none"> All studies showed improvement in cardiac related outcomes.

Appendix B

Flowchart

