11-24-2015

The Mediterranean Diet: Could Obese America Eat its Way to a Longer Life?

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GH 401

24 November 2015

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ABSTRACT

The Mediterranean Diet (MD) is a long-standing form of nutrition that may be partially responsible for the long life-expectancy of European Mediterranean countries. If this diet is capable of increasing longevity, it may be worthy of integration into U.S. culture. This study uses literature to explore the effects of the MD on disease prevention, as avoidance of potentially lethal, non-communicable disease could increase longevity. Nationally prevalent diseases were studied, including obesity, type II diabetes, and COPD, among others. Results indicate that the diet has been linked to lower risk for development of a wide variety of diseases, thus indicating it could lengthen American life expectancy, making it a concern for the governmental, economic, and public health sectors. Some challenges of integration of the MD in U.S. culture were explored in literature. Major obstacles include financial limitations for economically distressed individuals, lack of accessibility, and clashing cultural barriers on diet style. Solutions were investigated and include SNAP reform to lessen financial stress, elimination of food deserts through the "Let's Move!" campaign, and education of the public sector about the MD. Many challenges exist as barriers for the adoption of the diet in the U.S., and successful integration will require local and federal efforts. While integration will not be easy, significant changes in the future could allow the diet to become a part of U.S. culture. The MD could provide the increasingly obese United States with an opportunity to eat its way to a longer, healthier life.

KEYWORDS: Mediterranean Diet, Nutrition, American Health

INTRODUCTION

The root of the name for the Mediterranean Diet (MD) comes from the Greek word, "diaita," which means "way of life." This way of life encompasses a diet composed of mainly plant elements, and serves as a model for other healthful dietary styles across the globe (Altomare 451). The Central Intelligence Agency ranked countries based on life expectancy and the results show Andorra as 8th, Italy as 14th, France as 19th, Spain as 21st, and Greece as 34th, with the U.S. ranking in only 43rd place ("World Factbook"). European Mediterranean countries as a whole have longer life expectancy than the U.S. and the majority of other countries around the world. There are cultural and geographical similarities between these Mediterranean countries, but diet is a single entity which may be partially responsible for the health of these regions. The MD as a whole has been found to provide incredible health benefits, including disease prevention and weight loss. These benefits are significantly better than those of single food modulations (Donini S1).

The History of the Mediterranean Diet

The MD has been around for centuries. Altomare states that it originated in the central part of the Mediterranean, which served as a meeting place between the Cretans and the Phoenicians. The merging ideas of these civilizations is what would later give rise to the development of the Mediterranean lifestyle. The birth of this culture is, of course, where the MD's roots began. During the Middle Ages, the Romans, located in the Mediterranean, consumed the staple foods of bread, wine, and olive oil, with added varieties of sheep cheese, vegetables, and seafood. The Germanic diet clashed with the Mediterranean staples, as it was

associated with forest nomads who relied on hunting and gathering, farming pigs, and using any grains produced for beer production. It was considered a barbaric lifestyle by the Romans, so only a few adaptations from Germanic influence occurred in their culture. Simultaneously, the diet of bread, oil, and wine was delivered to other European areas for evangelical purposes. As the diet travelled to other civilizations throughout the continent, another influencing culture entered: the Arabic world. The Islamic civilizations' influences from southern Europe, especially Spain, introduced more elements into the traditional diet, such as citrus, eggplant, pomegranates, almonds, spinach, spices, and rice, among others. As time continued, the blend of Germanic and Arabic culture with the traditional Roman diet stormed throughout the world, experiencing minute adaptations in each new region in which it came into contact. Notably, the discovery of the Americas introduced new plant foods, such as potatoes, corn, peppers, chilies, beans, and especially tomatoes, which were originally thought to be barely edible. Since their European discovery, tomatoes have gone from being a last-resort food item to being the poster-child for the MD (Altomare 449-450).

Perhaps the diet's popularity has persisted for centuries not because of its focus on plants, but because of its foundational base of grains. Grains provided the ability to fill individuals for low economic cost, making them a basis for the lifestyle of the wealthy and poor social classes. Each Mediterranean country embraces grains in a different manner, but each utilizes them as a staple for sustaining life. The grains and cereals used differ by region as well as cooking methods. A few examples include bread, polenta, pasta, and paella (Altomare 450).

Components of the Mediterranean Diet

Ancel Keys, according to Altomare's article, described the MD as "... homemade minestrone, pasta of all varieties, with tomato sauce and a sprinkling of Parmesan, only

occasionally enriched with a few pieces of meat or served with a small fish of the place. Beans and macaroni ..., so much bread, never removed from the oven more than a few hours before being eaten, and nothing with which spread it, lots of fresh vegetables sprinkled with olive oil, a small portion of meat or fish maybe a couple of times a week and always fresh fruit for dessert (451)." The MD's formal structural guidelines is summarized as follows: In modern times, the MD is still composed mainly of plant elements. The majority of nutrients should come from plants foods, with the highest consumed food group consisting of whole grain cereals, rice, and breads. Fruits, vegetables, and legumes should follow closely behind the amount of whole grains consumed. The majority of unsaturated fats consumed on a daily basis should come from extra virgin olive oil. Moderate amounts of red wine with meals should be incorporated daily. In addition, moderate quantities of low-fat/non-fat cheese and yogurt should be consumed. On a weekly basis, fish and poultry should be incorporated, with no more than four eggs per week being ingested. Foods high in saturated fats, especially red meat, should only be consumed monthly ("MD Reduces" 15).

Determining the "Healthiness" of the Mediterranean Diet on lifespan through Literature Sources

It is commonly known that the MD is "healthy." "Healthy" seems like an abstract, unquantified description of the benefits of the Mediterranean lifestyle. What does this word "healthy" actually mean in regard to health benefits and disease development? As obesity and other diseases plague the U.S., it would be valuable to investigate lifestyle options to improve American life expectancy. Although it is commonly known that the MD is "healthy," it would be beneficial to know if the diet could increase longevity in Americans, thus the goal of this study is to review the effects of the MD on diseases with leading mortality rates in the U.S.,

determine whether this diet has the potential to increase the life expectancy of Americans, and identify challenges and solutions for integrating this lifestyle into the United States. The relationship between the MD and disease will be studied through the review of articles that examine correlation between Mediterranean-based nutrition and individual condition development. If the MD decreases likelihood of fatal disease development, it can be inferred that it is able to increase average life expectancy. Finally, methods and challenges of incorporation of the MD in the United States will be examined through review of health initiative proposals and general analysis. In summary, the specific disease prevention capabilities from adhesion to the MD will be examined through a literature review and used for evidence as to whether this lifestyle could increase American life expectancy, as well as challenges and possibilities of its integration into U.S. culture.

EXAMINATION OF THE MEDITERRANEAN DIET'S RELATIONSHIP WITH DISEASE AND THE FUTURE OF THE DIET IN THE UNITED STATES

Can the Mediterranean Diet Prevent Disease?

To investigate this question, a literature review was conducted to examine effects of the MD on the most prevalent diseases in the U.S. Diseases examined include obesity, hypertension, cardiovascular disease, chronic obstructive pulmonary disease, lung cancer, breast cancer, colorectal cancer, type II diabetes, and dementia. The diet's impact on general life satisfaction was also examined as quality of life plays a significant role in development of unhealthy psychological conditions. Aside from the diet as a whole, alcohol consumption and napping were considered as individual elements as they are components of the Mediterranean lifestyle. Results were examined to determine effects of the MD on individual disease prevention.

Beunza studied the effects of the MD on obesity in over 10,000 Spanish individuals. According to the National Lung, Heart, and Blood Institute, obesity greatly increases the risk of development of other diseases, including coronary artery disease, hypertension, stroke, type II diabetes, cancer, and arthritis, to name a few ("What are the Health Risks"). Therefore, decreasing obesity is an excellent method for improving overall health. Participants described daily food and calorie intake in a survey and were placed into a category based on the adherence of their diet to the MD. Participants followed up biannually indicating weight change from initial baseline weight recorded. Results demonstrated that individuals with highest adherence to the MD gained less weight between follow-up periods than the lower adherence groups. Age did not seem to affect weight loss from the diet and lower weight gain with the diet was only slightly more significant with males than females. These findings indicate that the MD is associated with less annual weight gain as well as a significantly lower risk for obesity in a large span of ages (Beunza 1484-1489).

Doménech studied the Mediterranean Diet's relationship with hypertension, which, according to the Center for Disease Control and Prevention, is a disease in approximately one-third of the U.S., and it often leads to serious health complications without warning. A common side effect of obesity is hypertension, but it can also occur in non-obese individuals. ("High Blood Pressure"). In Doménech's study of the effects of the MD on hypertension, it is asserted that hypertension is the highest ranked preventable cause of death in the world. Doménech also states that the most influential lifestyle factor on blood pressure is diet. Nearly 300 Spanish individuals from the Hospital Clinic of Barcelona and the Primary Care Division of Seville were studied. The participants' age ranged between 55 and 80 years and all were at high risk for cardiovascular disease development, but none had the disease at the start of the study. All

participants had type II diabetes or possessed various risks for cardiovascular disease development, such as smoking. Three diets were randomly assigned to patients: a traditional low-fat diet (which acted as the control), a MD supplemented with extra-virgin olive oil, and a MD supplemented with nuts. Participants' 24-hour ambulatory blood pressure was measured weekly. Overall blood pressure decreased slightly in both of the MD groups while it increased slightly in the control group. Doménech states that the results seem small, but asserts that the MD's benefits on blood pressure could be enormous on a group the size of an entire population (69-72).

In Mena's study, it is stated that cardiovascular disease is the leading cause of death in industrialized nations. Japan and countries who follow the MD have significantly lower rates of cardiovascular disease than regions of northern and eastern Europe, as well as the United States. Cardiovascular disease is related to a variety of factors, one being inflammation from immune cell activation. One hundred twelve participants at the Clinic of Barcelona followed a MD with nuts, a MD with olive oil, or a low-fat diet. After three months, inflammatory markers in blood serum were measured and compared to initial levels. Inflammatory marker CD49D expression was lower in both MD followers and unchanged in the low-fat group. Inflammatory adhesion molecules and C-reactive protein (a marker of inflammation) levels were also lower in the MD followers with olive oil. Various adhesion molecules (critical for inflammation) increased in the participants who followed the low-fat diet. This reduction of inflammation from the MD supplemented with healthy fats indicates that it may reduce the risk of development for cardiovascular disease better than low-fat diets (Mena 248-255).

Reedy's study also researched cardiovascular disease and the MD. It involved nearly 425,000 retired individuals from six U.S. states and two U.S. metropolitan areas. Diets of

participants were examined in the following indices: Healthy Eating Index-2010 (HEI-2010), the Alternative Healthy Eating Index-2010 (AHEI-2010), the Alternate MD (aMED), and Dietary Approaches to Prevent Hypertension (DASH). These indices were studied in relation to cardiovascular disease and cancer mortality. The participants were followed from 1995-2011, deaths were recorded, and death cause was investigated. It was concluded that all of these diets were linked with lower risk of cardiovascular disease and cancer mortality. Reedy states that common traits between the four diets are whole grains, fruits, vegetables, and plant-based proteins (881-887).

An aspect of the MD which separates it from other whole grain and plant-based diets is its inclusion of moderate alcohol consumption. Cao, upon significant literature-based studies, asserts that moderate red wine consumption is able to provide health benefits, particularly cardiovascular. Ethanol in general has been found to prevent thrombus formation, but red wine does so with smaller amounts of it. (Recall that only moderate alcohol consumption is safe.) Additionally, red wine specifically increases antioxidant activity, which is beneficial because protection against free-radical uptake from oxygen toxicity prevents formation of early atherosclerotic plaques. Finally, Cao asserts that red wine induces vasorelaxation, which is one of the body's methods for lowering blood pressure through decreasing vascular resistance. According to Cao, red wine, a daily component of the MD, specifically provides these protective benefits, while other alcohols do not (76-80).

Aside from the MD's food, another staple of the culture is a daily break or "powernap," which has been found to provide heart health benefits. Gerstenblith conducted a study to understand the potential effects of napping on coronary health. Nearly 24,000 Greek adults were studied (another country which follows the Mediterranean lifestyle) who had no major disease.

Of the 24,000 participants, approximately 17,000 reported at least occasionally napping. Participants were followed for six years and results showed a link between midday napping and heart health. Participants who napped, even occasionally, were one-third less likely to die from coronary artery disease. Additionally, participants who reported regular midday naps (at least three times a week for a minimum of thirty minutes each session) were even less likely to die from coronary artery disease than their occasional napping counterparts (Gerstenblith 19). Prevention of coronary artery disease is of particular interest because, according to the U.S. National Library of Medicine, it is the most common form of heart disease, and it is very prominent in developed nations. In addition, coronary artery disease is the leading cause of death in the United States among both men and women ("Coronary Artery Disease").

Perhaps in competition with coronary artery disease is chronic obstructive pulmonary disease (COPD), which, according to Tanday's findings, will become the world's third leading cause of death by 2020. Tanday compared a Western diet and a MD in relation to risk for development of COPD. Nearly 43,000 U.S men between ages 40-75 years who were COPD free at the beginning of the study were asked to complete routine surveys regarding smoking habits and diet. After twelve years, 111 COPD cases were diagnosed in the participants, and MD followers were 50% less likely to develop the disease. Data was adjusted for smoking frequency and age, and the results still remained the same. It has been hypothesized that the MD's high source of antioxidants may provide anti-inflammatory effects in pulmonary tissue (Tanday 16-17).

Perhaps a disease that has instilled much fear and devastation in the world is cancer. The World Cancer Research Fund International states that, excluding non-melanoma skin cancer, the top three cancers in 2012 (the most recent data available) were lung cancer, breast cancer, and

colorectal cancer ("Worldwide Data"). Additionally, out of fifty countries, the World Cancer Research Fund International ranks Italy as twenty first, Spain as thirty fourth, Portugal as thirty sixth, and Macedonia as fortieth of the fifty countries with the highest incidence of cancer, with all of these Mediterranean countries ranking significantly lower than the majority of other developed nations, including the U.S. (ranked the sixth highest of cancer incidence) and most other European countries. The closeness in ranking between the countries, especially between Portugal, Spain, and Macedonia, provides reason to believe that the MD may play a significant role in cancer development/prevention. It should be noted that Italy and France rank fairly higher than other Mediterranean countries ("Data for Cancer"). This statistic may demonstrate that other cultural factors can largely influence cancer development.

As stated previously, lung cancer is the top cancer developed worldwide ("Worldwide Data"). Fortes studied the potential protective effects of the MD against lung cancer on Italian patients. Over the course of three years, patients admitted to the hospital for respiratory problems completed questionnaires involving smoking, occupational involvement with carcinogens, and diet. The results indicated a protective effect from the MD against lung cancer development. It was posed that this is probably due to anti-inflammatory qualities of the diet, especially in regard to exclusive use of olive oil rather than other vegetable-based oils (Fortes 30-37).

After lung cancer is breast cancer of leading cancers in the world ("Worldwide Data"). The effects of the MD on breast cancer development were studied by Trichopoulou in 14,807 Greek women between the ages of 20-86 years. Surveys were distributed and participants evaluated their daily dietary components. After almost ten years, 240 cases of breast cancer were recorded in the participants. Analysis found that there was no correlation between breast cancer

development in premenopausal women who followed the MD, but results indicated that the MD may be linked to lower incidence of breast cancer development in postmenopausal women. Trichopulou adds that the MD is known to lower levels of endogenous estrogen (which is significant as high levels have been linked to cancer development) and it is high in antioxidants (620-624).

The third leading cancer incidence is colorectal cancer ("Worldwide Data"). For twelve years, 1,014 individuals were studied in southern Italy. Of participants, 338 had a first diagnosis of colorectal cancer. This study's results concluded that the MD aids in prevention of colorectal cancer development and may reverse other negative health conditions including obesity and diabetes. In addition to preventative qualities from plants and grains in the diet, Grosso also discusses the importance of low red meat intake in the diet, as red meat has been associated with increased colorectal tumor development due to carcinogenic material in its composition. The study did not indicate a protective effect of red wine against colorectal cancer. Alcohol consumption in general induced negative effects on participants in regard to colorectal cancer development; however, participants who followed the MD closely (the individuals who drank moderate amounts of red wine daily) experienced weakened negative effects from alcohol than non-MD followers (Grosso 558-563).

Type II diabetes is another disease at the top of the charts, as nearly 347 million individuals worldwide had been diagnosed with it in 2010, so the MD's effects on it must be examined. Lifestyle modifications, such as diet changes and increased physical activity, are more effective in prevention of type II diabetes than medication, and the typical nutritional recommendation for lowering risk of type II diabetes is calorie restriction. Salas-Salvadó developed a study at various sites in Spain to understand the effects of the MD, a high calorie

lifestyle, and risk for diabetes development. Approximately 3,500 Spanish participants at high risk for coronary artery disease were placed on either a traditional low-fat diet (the control group), a MD supplemented with nuts, or a MD supplemented with extra virgin olive oil. In regard to risk of development of type II diabetes, results showed a decrease of 18% in the followers of the MD supplemented with nuts, and a remarkable 40% decrease was found in followers of the MD supplemented with extra virgin olive oil (Salas-Salvadó 2-7). It should be noted that the additional health benefits from a MD with olive oil is easily accessible in Spain, Italy, and other Mediterranean countries because of the ideal climate for olive growth in the Mediterranean region. Notably, according to the International Olive Council, Spain accounts for nearly 62% of the world's olive oil production, so this supply of extra virgin olive oil may play a large role in several areas of disease prevention ("World Olive Oil").

Similar findings occurred in a different study performed by Ajala, where various diets and correlation to glycemic control, lipids, and weight loss (factors linked with type II diabetes development) were studied. The various diets compared included a low-carb diet, vegetarian diet, vegan diet, low-glycemic index diet, high-fiber diet, MD, high-protein diet, and control diets of low-fat, high-glycemic index, low-protein, the American Diabetes Association, and European Association for the Study of Diabetes diets. The MD, along with three of the other experimental group diets, led to better glycemic control, with the MD showing the highest glycemic control. The low-carb diet and MD both showed the best weight loss, with the MD inducing the highest weight loss. Increased HDL cholesterol ("good" cholesterol) was reported in all the diets except the high-protein diet. It was concluded that the MD, along with low-carb and low-glycemic index diets, is an effective tool for diabetes prevention and management (Ajala 505-514).

As individuals age, it is commonly known that susceptibility to disease increases, especially cognitive decline, and perhaps most notably in the development of dementia, which has been studied in relation to the MD. In Opie's literature review, four of six included studies indicated a correlation between adherence to a MD and a significant decrease in risk for development of dementia (206-215). Scarmeas' study found similar results. From 1992-1999, 2,258 individuals with an average age of 77 years were evaluated based on their eating habits approximately four times per year. It was found that individuals with a moderate adherence to the MD were about 20% less likely to develop Alzheimer's disease, and those with a high adherence experienced a 40% decreased chance of dementia development ("MD Reduces" 15).

Aside from disease prevention benefits, the MD may also provide a higher feeling of life satisfaction than other diets according to a study by Grao-Cruces. Adolescents in secondary education within the region of Andalucía, Spain were studied in relation to their dietary habits and satisfaction of life. A total of 1,973 participants between the ages of 11 and 18 years participated. Another factor considered was rural versus metropolitan residency among individuals. Among participants, around 30% of individuals were found to optimally follow the MD, while others moderately followed the diet or loosely followed it. Rural adolescents and younger aged participants were more likely to closely follow the MD than urban individuals. No difference in adherence was noted between sexes. Participants with highest MD adherence were also the most physically active and spent more time on school work. Results showed that the individuals with the highest adherence to the MD felt the highest levels of overall life satisfaction (Grao-Cruces 1129-1134).

After examination, it is clear that the MD plays a role in the prevention of a wide plethora of the most common diseases in the U.S. Specifically, the MD may lower the risk for obesity,

hypertension, coronary artery disease, COPD, various cancers, type II diabetes, and dementia. With disease being the leading cause of death in the world, it can be concluded that the MD could aid in increasing the lifespan of Americans ("Leading Causes"). Additionally, it has been associated with higher feelings of satisfaction in life, indicating it could not only increase life length, but also life quality. Prevention of health conditions should be targeted in order to increase longevity. Outside of providing longer lives for Americans, the MD may also be an economic tool as decreasing disease could diminish the amount of funds spent on healthcare.

Methods and Challenges of Incorporation of the Mediterranean Diet in the U.S.

There are several challenges that must be overcome in order to make the MD a typical part of the daily lifestyle for all U.S. individuals. First off, the food items that constitute the MD are expensive in the United States. This expense makes adherence to the MD especially difficult for lower income households. Branscum poses the idea of "nudging" Americans, especially financially distressed individuals, to make healthier food choices through behavioral rewards. The Supplemental Nutrition Assistance Program (SNAP) would reform and promote food quality over food quantity. One reform proposal involves subsidies associated with healthful foods. If an individual purchases a subsidized item, he will receive a credit in his account which will be able to be used upon the next visit on additional healthy food purchases. This idea would be beneficial in integrating the MD in the U.S. because it would not only make the necessary Mediterranean food components more affordable, but it would also help disperse the aid for food purchasing over time rather than only at the beginning of the month. This would prevent malnutrition in individuals using food stamps who purchase ample food at the beginning of the month and do not have enough resources at the end of the period prior to the new aid being disbursed. Food items for the diet would be more financially accessible and would be

consistently available in the home with fewer consequences from poor budgeting (Branscum 396-402).

Aside from the actual cost of food, the transportation needed to gain access to items serve as additional barriers for individuals of lower socioeconomic class. A large portion of Americans, especially those who reside in low-income areas, live in food deserts, or regions without access to fresh foods. As the cost of transportation increases, food deserts become more of a problem and individuals must rely on local convenience stores and gas stations for grocery shopping needs. The Healthy Food Financing Initiative, supported by the U.S. government as a part of the "Let's Move!" campaign, has plans in place to eliminate food deserts in the U.S. by 2019. *Professional Safety* asserts that this initiative will not only provide fresh food for economically challenged neighborhoods, but that it will also create new jobs as it develops new grocery establishments ("Healthy Food Initiative" 1). The creation of new jobs involves generation of income for financially distressed individuals, making access to healthy food more possible by healthy food being closer and less of a financial burden for families.

The U.S. culture is an additional barrier for adherence to a Mediterranean lifestyle. There is a mentality of "work hard, rest later" which stands in the way of being able to integrate an afternoon nap or time for relaxation. Additionally, to most Americans, a meal is not considered complete without meat. This cultural element poses a challenge for the MD as the majority of nutrients are supposed to come from grains and plants. In order to overcome this cultural barrier, I would recommend education and demonstration as a solution to the U.S. First, educating adults and children about the MD, as well as accessibility, must occur in order to peak interest in cultural change. Educational programs through schools and public information for adults should be made available to teach Americans about the diet, with emphasis on its simplicity and health

benefits. If a reward system is successfully initiated by SNAP, this should be included in the education as well to reveal financial benefits. Aside from public information about the diet and its benefits, more meals styled after the MD should be available or advertised. The simplicity of the diet allows for great diversity, which is a beneficial element that should be emphasized. Examples of delicious, healthful, and diverse Mediterranean-style meals should be made easily accessible to individuals to demonstrate that this healthful lifestyle can also be satisfying.

In summary, integration of the MD into the United States poses several challenges, especially the cost and accessibility of fresh, nutritious food as well as cultural barriers. Proposed solutions are in existence, but have not yet taken effect or been in place long enough to see results. Public education, elimination of food deserts through locally available fresh markets, and reform in the SNAP initiative are some of the proposed solutions. Integration of the MD in the U.S. will not be possible without national and local efforts and reforms. With time and problem-solving, the diet may be able to be adopted by U.S. culture, but many economic and cultural challenges still exist.

CONCLUSION

The MD is a long-standing way of eating founded on grains and plant foods which has been generally coined as a “healthy” lifestyle. While the U.S. has suffered nutrition-based disease epidemics, it is important to identify ways to combat illness and malnutrition, such as integration of the MD into American culture. The MD’s effects on disease development were studied through literature review in order to determine if it could increase life expectancy in the United States. The protective effect against various diseases was considered in order to determine if the diet has the potential to increase American life expectancy. Additionally, future challenges and methods for diet integration in the United States culture was explored.

Results demonstrated that the diet is successful in prevention of, or demonstrates correlation to, lower rates of development of obesity, hypertension, cardiovascular disease, chronic obstructive pulmonary disease, lung cancer, breast cancer, colorectal cancer, type II diabetes, and dementia. A summary of findings is as follows: In regard to obesity, results indicated that the MD is associated with less annual weight gain as well as a significantly lower risk for obesity. A slight overall blood pressure decrease was observed in followers of the M which could have an enormous effect on a group the size of an entire population. Results indicated lower inflammatory markers in followers of the MD, which could lead to reduced risk for cardiovascular disease development. In regard to red wine as a component of the MD, it has various protective agents against cardiovascular disease in moderate amounts. Observations indicated a relationship between napping and lowered risk for cardiovascular disease. The antioxidants in the MD may provide a protective effect against COPD development in both smokers and nonsmokers. Studies indicated a protective effect against lung cancer development. Analysis indicated no correlation between breast cancer development in premenopausal followers of the diet, but results did demonstrate a link to lower incidence of breast cancer development in postmenopausal women. Evidence demonstrates that the MD prevents colorectal cancer. There is a decreased risk in diet followers for type II diabetes development, especially with use of olive oil, and it was concluded that the MD was an effective lifestyle in both prevention and management of type II diabetes. Analysis from multiple studies indicated that the diet reduced risk for dementia development. Aside from actual disease prevention, a correlation between MD followers and higher satisfaction levels with life was observed.

The literature reveals that the MD is a nutritional and cultural lifestyle which supports lower risk for disease development in general. With this is in mind, it can be concluded that

Americans could develop longer life expectancy with the adoption of MD food choices. Upon analysis of these results and determination that the diet could increase life expectancy, challenges of integration of its components into American culture were explored, as well as solutions to these barriers. The challenges that were the main focus included financial disadvantages, limitation in access to nutritious food products, and cultural clashes in dietary norms, although many more surely exist. Solutions included the elimination of food deserts through the "Let's Move!" campaign, SNAP reforms, and public education about health benefits and tasteful varieties of the diet.

In the future, this study could be further advanced through the study of more diseases experienced in the United States, such as other cancers or GI diseases, among others, in relation to the MD, as well as review of multiple studies on the same diseases. Exploration of additional studies on the same disease would provide more accurate, dependable information on the diet's effects on specific disease development. Additionally, a plethora of challenges in the United States still exist that serve as barriers against the diet's incorporation into American culture. Broader consideration of these difficulties and potential solutions could be further incorporated. Limitations in this study included time constraints, limited data resources, and possible bias toward positive effects of the diet.

In closing, the MD could serve as a tool to increase life expectancy in the United States and prevent numerous commonly-occurring, non-communicative diseases. This conclusion is relevant in the areas of public health, economics, and politics. The public health sector could utilize this information to improve the country's health while the economic implications the diet could have on the nation may be endless, as prevention of disease could dramatically diminish healthcare costs. Lastly, policymakers should be informed of the benefits in order to make

informed decisions on national healthcare spending and agency support. It is known that the U.S. likes to eat, and the MD may provide an opportunity for America to eat its way to a longer life.

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