



# Effects of Mediterranean DIETS (MetDiet) on Cardiovascular Disease Prevention among Ethnic Minorities in the United States

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## Abstract

The Mediterranean diet (MetDiet), which consists of consumption of fruits and vegetables, whole grains, olive oil, and lean protein sources such as fish, has shown considerable cardiovascular benefits and has been extensively researched; however, Its effect in preventing cardiovascular disease (CVD) in ethnic minorities in the United state remains unknown. This study investigates the effect of MetDiet on cardiovascular disease (CVD) prevention among ethnic minorities in the United States. A comprehensive literature review showed MetDiet adherence lowers Cardiovascular Vascular Disease risk variables, such as hypertension and dyslipidemia, among African Americans, Hispanics, and Asian Americans; the review also exposed variations in levels of adherence, access, and health outcomes within these ethnic groups. The disparities have been associated with unhealthy dietary patterns, lack of exercise, stress, obesity, Cultural food preferences, socioeconomic limitations, and insufficient awareness. Ethnic minorities face a disproportionate burden of CVD, making tailored interventions essential. Culturally adapted approaches to promote the MetDiet may enhance its acceptance and effectiveness. This review of the effects of the Mediterranean diet underscores the need for inclusive dietary guidelines and community-specific strategies to bridge the gap in CVD prevention and improve health equity among diverse populations. Our results suggest that Med-Diet is associated with substantial improvements in cardiometabolic markers such as waist circumference, BMI, insulin levels, and inflammatory markers, which underscores its potential in managing and preventing cardiometabolic diseases.

## Subject Areas

Cardiology

## Keywords

Mediterranean Diet, Cardiovascular Disease, CVD Prevention, Racial Minorities, African Americans, Asian Americans, Socioeconomic Factors, United States, Latin Americans, Mexicans, MetDiet, Cardiometabolic Disease

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## 1. Introduction

Cardiovascular diseases (CVD) present a huge threat to the health and well-being of people all over the world. By definition, CVD includes any disease involving the heart and blood vessels. Some of the major cardiovascular diseases include Coronary heart disease, cerebrovascular disease (commonly known as stroke), and hypertension [1]. Cardiovascular diseases currently stand as the leading cause of death globally and account for approximately one-third of deaths worldwide. In 2019 alone, it is estimated that about 17.9 million people died from CVDs, representing 32% of all global deaths, with over three-quarters of these deaths taking place in low- and middle-income countries [2]. However, the burden of CVD in wealthy and developed countries is predicted to increase in the years to come, making it a global concern. In the United States, one person dies every thirty-three seconds from cardiovascular disease [3]. By the year 2035, It is predicted that nearly half of the US population is expected to have some kind of cardiovascular disease [3]. These figures raise serious concerns and prompt the need to promote better cardiovascular health to ensure better health and well-being of people worldwide.

There are several risk factors associated with the incidence and development of cardiovascular diseases. Some of these risk factors can be modified, while others cannot. Non-modifiable risk factors of CVDs include age, race, ethnicity, sex, and family history [4]. Modifiable risk factors include elevated cholesterol levels, high blood pressure, smoking, physical inactivity, a high body mass index, diabetes mellitus, etc. [4] [5]. However, some modifiable risk factors were also observed to be more present among people of different ethnicities, leading to disparities in the occurrence of CVDs [6]. Several studies have reported a disparity in the occurrence of cardiovascular diseases among different ethnic groups. For example, it was observed that African Americans face a higher risk of hypertension and stroke, compared to whites, while Hispanics are at a higher risk of obesity-related heart diseases [7]-[10]. These differences in the prevalence of CVDs are attributed to many factors including socioeconomic status, access to health care, genetic predisposition, and cultural influences on their diet and lifestyle among these populations [11]-[13].

Diet has been identified as a lifestyle factor that can help prevent the development of cardiovascular disease. It plays an important role in the management of other CVD risk factors, such as obesity, hypertension, diabetes, etc. [14] [15]. Poor diet quality is also linked with an increased risk of cardiovascular disease morbidity and mortality. A reduction in excess calorie intake and improvement in dietary composition is believed to be capable of preventing many primary and secondary cardiovascular events [16]. Some evidence-based dietary pattern guidance to promote cardiovascular and cardiometabolic health includes adjusting energy intake to achieve and maintain healthy body weight, eating plenty and wide varieties of fruits and vegetables, eating whole grain foods and products, eating healthy protein sources, mostly plants and regular intake of fish and seafood and low-fat or fat-free products, reduced consumption of salt, beverages, and alcohol, etc. [17]. While it is difficult to determine the specific impact of individual nutrients on health benefits for CVDs, some researchers suggest the greater importance of viewing diet as a whole rather than focusing on specific nutrients [18] [19].

Over the years, various diets have been studied for their effectiveness in the prevention of CVD. The Mediterranean Diet (MetDiet), in particular, has been widely attributed to reducing and improving cardiovascular health [20]-[23]. The Mediterranean diet differs from the standard American diet due to its low composition of saturated fat, processed refined grains and sugars, and red meat. It is also different from other dietary patterns due to its emphasis on extra virgin olive oil (EVOO), nuts, reduced dairy consumption, and eating with family [24]. Traditionally, the MetDiet was an established eating pattern among populations living in the Mediterranean basin during the 50s and 60s. It was first defined by Ancel Keys as a diet low in saturated fat and high in vegetable oils, observed in Greece and Southern Italy during the 1960s [25]. However, this definition has changed over time. Today, a typical MetDiet is characterized by a high intake of extra virgin olive oil, vegetables including leafy green vegetables, fruits, cereals, nuts and legumes, moderate intakes of fish and other meat, dairy products and red wine, and low intakes of eggs and sweets [26].

Several studies and clinical trials have demonstrated the successful use of MedDiet in the primary and secondary prevention of CVD [27]-[29]. Over the years, researchers have developed indexes and scores to help assess the relationship between adherence to a MetDiet pattern and a reduction of cardiovascular risk factors (diabetes, obesity, and hypertension). However, most of these studies have been conducted in Mediterranean and European countries, with only a few looking at the effect of the Mediterranean diet, specifically in non-Mediterranean countries or racial/ethnic minority populations in the US. Since minority ethnic groups make up over 40% of the population of the United States, it is important to investigate if similar benefits of following a Mediterranean diet are observed in these non-white populations to understand and address the disparities in the occurrence of cardiovascular diseases. Therefore, this systematic review evaluates the effectiveness of the Mediterranean Diet in preventing cardiovascular diseases

among ethnic minorities in the United States.

## 2. Methodology

### 2.1. Research Question

This study focused on the effects of Mediterranean diets (MetDiet) on cardiovascular disease prevention among ethnic minorities in the United States since there is not much information on the contribution of the Mediterranean diet to CVD prevention among these populations. The research question for this study was developed using the patient, intervention, comparison, outcome (PICO) model. Although other models, such as Sample, Phenomenon of Interest, Design, Evaluation, Research Type (SPIDER), Population, Exposure/Environment, Outcome (PEO), Setting, Perspective, Intervention, Comparison, Evaluation (SPICE), etc. exist, the PICO model is most commonly used and accepted among scholars as a universal approach for formulating a research question or planning a search strategy [30]. The Cochrane Handbook for Systematic Reviews of Interventions [31] also specifies using PICO to develop a review question to ensure that all the relevant components of the question are well defined.

The PICO framework employed in this study is provided below.

Population: Ethnic Minorities in the United States.

Intervention: Mediterranean Diets.

Comparison: Usual/Regular Diets.

Outcome: Improved/Reduced Occurrence of Cardiovascular Diseases.

From the PICO Framework, the following research question was developed: “What is the effectiveness of consuming Mediterranean Diets or regular diets in the prevention of cardiovascular diseases among ethnic minorities in the United States?”

### 2.2. Search Strategy

Five databases (Pubmed, Cochrane Library, AMED, MEDLINE, and APA Pschinfo) were used to identify articles focused on MetDiet and the incidence/risk of CVD among ethnic minorities in the United States. Ethnic minorities were defined as non-white/Caucasian populations including Africans, African-Americans, Asians, Hispanics, and Latin Americans. The keywords used for the search are provided in **Table 1** below.

**Table 1.** PICO Search strategy.

P	I	C	O
Ethnic Minorities	Mediterranean diets	Regular diets	Prevention
Racial Minorities	Mediterranean-style diet		Prevalence

**Continued**

African Americans	Cardiovascular diseases
Africans	Cardiometabolic disease*
Asians	Cardio*
Black Americans	CAD
Mexicans	
Latin Americans	
Latins	

**2.3. Inclusion and Exclusion Criteria**

The inclusion criteria were Interventional or observational studies that evaluated the effect of Mediterranean diets on cardiovascular health or CVD health outcomes and risk factors like diabetes, Coronary Heart Disease, Stroke, etc. The search results were considered eligible for inclusion if the study was conducted in the United States and included minority ethnic populations. Since very few studies focused solely on minority ethnic groups, studies including white populations were also considered eligible for inclusion. There were no restrictions concerning the age and gender of the population, neither were there restrictions in terms of the year of publication.

Studies conducted outside the United States were excluded, and studies that did not assess the effect of Mediterranean diets on cardiovascular health outcomes among non-white populations. The literature search was narrowed to exclude studies not published in English and studies where the full text was unavailable. Duplicate studies, books, book chapters, reviews, theses, and dissertations were all excluded.

**2.4. Quality Appraisal**

The critical appraisal skills program (CASP) tool was used to appraise the quality of studies included in our review. The CASP Checklist consists of 12 questions that help assess the validity, results and applicability of Cohort studies. It is the most common criteria-based tool used for quality appraisal in health and social care-related qualitative evidence synthesis [32].

**3. Results****3.1. Study Selection**

Of the 2480 published articles screened at title and abstract level, 40 were identified as potentially eligible for inclusion in the review. 9 were removed after further screening and 31 full texts were assessed for eligibility. Of these, 9 were removed

because the studies were not conducted in the United States, 7 were excluded because they didn't consider cardiovascular diseases or their risk factor and outcomes, 3 articles were excluded because they didn't consider any of the minority ethnic groups and a total of 5 reviews and non-journal articles were excluded. Overall, 11 articles were analyzed. **Table 2** shows the summary of the results of the studies selected for inclusion.

**Table 2.** Data extraction matrix.

Author; publication year	Study population	Sample characteristics	Methodology	Major outcome
Mattei <i>et al.</i> , 2017 [33]	45 - 75 years n = 1194	Puerto Ricans living in Boston	Prospective cohort	A higher MedDiet score was associated with lower waist circumference, BMI, insulin, HOMA-IR, and CRP. Mediterranean Diet Score showed significant associations with various cardiometabolic outcomes. Increasing the Mediterranean Diet Score by 1 point was linked to favorable cardiometabolic risk factors.
Gardener <i>et al.</i> , 2011 [34]	>40 years n = 2568	Hispanics, non-Hispanic Blacks, and non-Hispanic whites from New York City	Prospective cohort	Higher Mediterranean-style diet consumption linked to reduced vascular event risk (ischemic stroke, myocardial infarction, and vascular death). Moderate and high Mediterranean Diet scores are associated with decreased myocardial infarction risk. No significant association was found between Mediterranean Diet score and ischemic stroke. No significant interaction by race-ethnicity
Levitan <i>et al.</i> , 2016 [35]	45 - 84 years n = 6814	Whites, African Americans, Hispanics, and Chinese	Prospective cohort	Mediterranean diet score linked to LV mass, volume, stroke volume. U-shaped association with LV mass, linear association with volume. Higher diet score associated with better LV structure and function.
Steffen <i>et al.</i> , 2014 [36]	18 - 30 years n = 4713	African Americans and whites	Prospective cohort	Higher mMedDiet scores linked to lower Metabolic Syndrome incidence over 25 years. Participants with higher diet scores had lower waist circumference. Moderate alcohol intake is linked to higher HDL-cholesterol levels. Fish intake inversely associated with CVD risk factors and MetSyn.
Jacobs <i>et al.</i> , 2016 [37]	45 - 75 years n = 89,185	Whites, Native Hawaiians, and Japanese Americans living in Hawaii and California	Prospective cohort	Higher adherence to MedDiet was related to a lower risk of Type 2 Diabetes in white participants but not in other ethnic groups

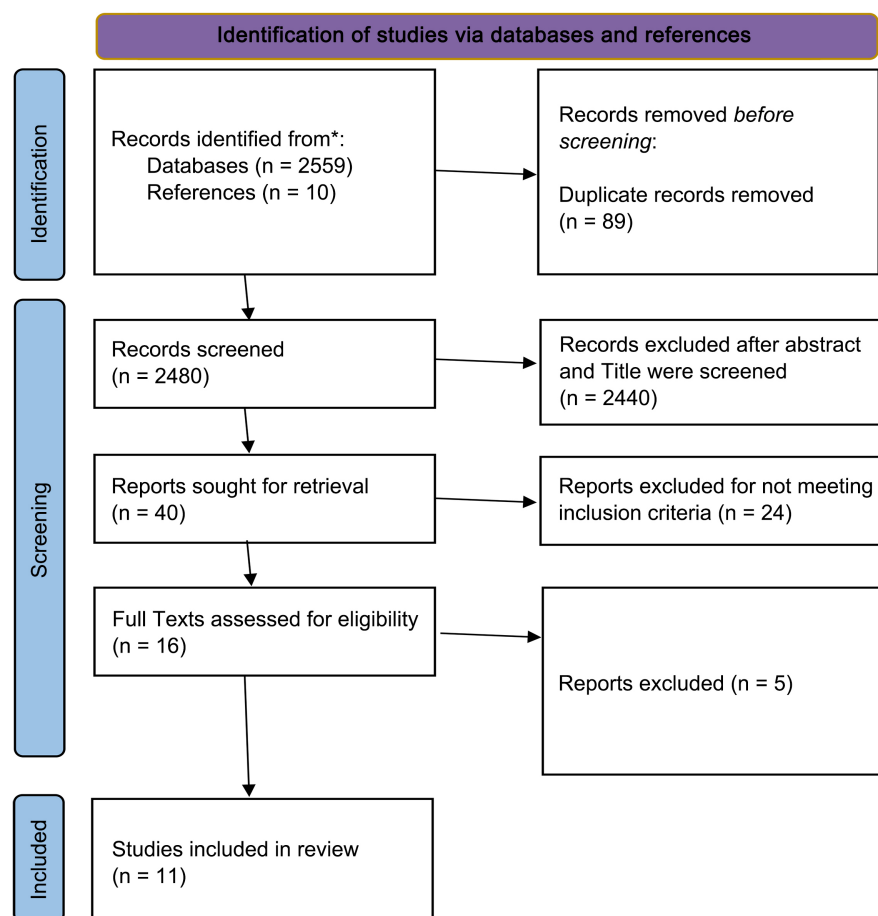
## Continued

Harmon <i>et al.</i> , 2016 [38]	45 - 75 years n = 215,782	White, African Americans, Native Hawaiians, Japanese Americans and Latinos	Prospective cohort	The MedDiet was associated with lower risk of CVD mortality in white participants, African American men and women and Japanese American men and women but not for in Latino or Native Hawaiians
Gardener <i>et al.</i> , 2015 [39]	>40 years n = 1937	Hispanics, non-Hispanic Blacks, and non-Hispanic whites from New York City	Prospective cohort	Greater adherence to MedDiet was associated with lower left ventricular mass (1.98 g lower per 1-point of the diet score). No significant interactions by race/ethnicity.
Gardener <i>et al.</i> , 2014 [40]	>40 years n = 1374	Hispanics, non-Hispanic Blacks, and non-Hispanic whites from New York City	Prospective cohort	MedDiet was not associated with carotid intima media thicknesses in the whole multi-ethnic cohort. No association between MedDiet and plaque thickness nor area in African Americans or whites. For Hispanics, an inverse association was found between MedDiet adherence and the 75th percentile of plaque thickness (beta-coefficient, (95% CI): -0.0906 (-0.1541, -0.0271) change in mm)
Abiemo <i>et al.</i> , 2013 [36]	45 - 84 years n = 5390	Whites, African Americans, Hispanics, and Chinese	Prospective cohort	Mediterranean diet linked to lower insulin levels in non-diabetics. No significant association between Mediterranean diet and diabetes incidence. Adjustment for waist circumference affected the relationship between diet and glucose. No significant interaction by race.
O'Connor <i>et al.</i> , 2020 [41]	Median age during visit 1 = 54, n = 11,991 during baseline study	Blacks and whites; 75% Whites	Prospective cohort	Mediterranean-style eating pattern linked to lower diabetes risk Stronger association in black participants compared to whites.
Turner-McGrievy <i>et al.</i> , 2023 [42]	n = 63. 21 in the Healthy US group, 22 in the Mediterranean group, and 20 in the Vegetarian group	African Americans	Prospective cohort	Mediterranean diet showed led to significant weightloss for participants and had a greater improvement in Healthy Eating Index

### 3.2. Study Characteristics

All the included articles were published after 2010. The population size in these studies varied and ranged from 63 to 215,782 participants. The studies included minority ethnic groups in the US such as African Americans, Hispanics, Asians, and Native Hawaiians. However, out of the 11 studies, some ( $n = 2$ ) focused on just one minority ethnic group/population, most ( $n = 7$ ) focused on two or more minority ethnic groups, and the remaining ( $n = 2$ ) included one minority ethnic group and the majority ethnic group in the United States.

The adherence of the study participants to the MedDiet was measured using dietary assessment tools like the Food Frequency Questionnaire (FFQ) to calculate MedDiet scores. Some studies followed up on the participants to observe cardiovascular outcomes. The primary cardiovascular outcomes measured in association with MedDiet scores included cardiometabolic indicators (waist circumference, BMI, insulin levels, HDL-cholesterol levels), cardiovascular events (myocardial infarction, ischemic stroke, vascular death), cardiac function (LV mass and volume), and metabolic syndrome incidence. Some studies considered factors such as age, sex, socioeconomic status, physical activity, smoking, and other dietary factors, to isolate the effect of the MedDiet on cardiovascular outcomes.



**Figure 1.** PRISMA flow chart of the selected study.

### 3.3. List of Papers Reviewed

The search results presented in **Figure 1** above (the PRISMA flow chart) show the summary of the papers used in the study. The databases provided a total of Two thousand five hundred and fifty nine (2559) research papers, of which only eleven met the inclusion criteria for this systematic review (**Table 2**).

## 4. Synthesis of Studies

### 4.1 Improved Cardio Metabolic Health

Three studies included in this review [33] [36] reported an improvement in the cardiometabolic health of participants in relation to Mediterranean diets. [36] reported that the Mediterranean diet was linked to lower insulin levels in non-diabetics. The study conducted by [33] also reported significant associations between the Mediterranean Diet Score and various cardiometabolic outcomes. They observed that a higher MedDiet score was associated with lower waist circumference, BMI, insulin, HOMA-IR, and CRP. The study also reported that increasing the Mediterranean Diet Score by 1 point was linked to favorable cardiometabolic risk factors. [43] reported that participants with higher diet scores had lower waist circumference, with those with higher waist circumference considered to be at an increased risk for cardiometabolic diseases.

### 4.2. Reduced Vascular Event Risk

In the study by [34], they observed that moderate and high Mediterranean Diet Scores were associated with decreased myocardial infarction risk in Hispanics, non-Hispanic Blacks, and non-Hispanic whites from New York City. They also reported that a higher Mediterranean-style diet consumption was linked to reduced vascular event risks like myocardial infarction and vascular death. However, they found no significance between Mediterranean Diet Scores and ischemic stroke. They also found no significant interactions between these risk factors and the different race/ethnicity in the study. [38], They also noticed an association between MetDiet and CVD mortality in their study. They reported that the MetDiet was associated with a lower risk of CVD mortality in African American men and women and Japanese American men and women but not for Latinos or Native Hawaiians.

### 4.3. Lower Type 2 Diabetes Risk

Studies in this review reported that the adherence to the MetDiet was linked with a lower risk of type 2 diabetes among some ethnic groups. In the study conducted by [37] on Whites, Native Hawaiians, and Japanese Americans living in Hawaii and California, they observed that a higher the MedDiet was related to a lower risk of type 2 diabetes in their white participants but not in the participants from other ethnic groups. [41] also observed a link between the MetDiet and a lower risk of diabetes. They reported stronger associations between MetDiet and a lower risk

of diabetes in black participants compared to whites.

#### 4.4. Improved Cardiac Structure and Function

[35] [39] [40] both reported associations between the MetDiet and an improvement in cardiac structure and function. In [35] study on Whites, African Americans, Hispanics, and Chinese, they opined that the MetDiet score was linked to left ventricular (LV) mass, volume, stroke volume. They observed that a higher diet score was associated with better LV structure and function. [39] also reported that greater adherence to MedDiet was associated with a lower LV mass. However, they observed no significant interactions between race/ethnicity and the diet score in relation to LV mass.

### 5. Discussion

The objective of this review was to investigate the effect of Mediterranean effects of Mediterranean diets (MetDiet) on cardiovascular disease prevention among ethnic minorities in the United States. The result of the synthesis of these studies revealed four themes that suggest the beneficial effects of Mediterranean diets on the cardiovascular health of people ethnic minorities in the United States. These themes include Improved Cardiometabolic Health, Reduced Vascular Event Risk, Lower Type 2 Diabetes Risk, and Improved Cardiac Structure and Function. The results of this systematic review add to the existing knowledge because they indicate that the benefits of adherence to the MetDiet extend across diverse population groups. However, only a few studies observed significant disparities between different racial/ethnic groups. Most concluded that observed associations with MedDiet and improved cardiovascular health outcomes were consistent across racial/ethnic groups.

The findings of this review revealed that adherence to Mediterranean diets improved cardiometabolic markers in the participants [33] [36] [43] reported significant associations between a higher MetDiet Score and improved metabolic outcomes, including a reduced waist circumference, lower BMI, and insulin sensitivity among Puerto Ricans living in Boston. This is consistent with the findings of [21], who assessed the effectiveness of MedDiet for the treatment and management of obesity, a major risk factor for cardiovascular diseases [44]. They observed a significantly greater reduction in body weight, fat mass, BMI, and waist circumference among participants in the MedDiet group. [16] also noted that compared to other diets, MedDiet led to greater reductions in BMI and body weight, as well as HbA1c, fasting plasma glucose, fasting insulin and cardiovascular risk factors in patients with T2D. [36] also observed that the Mediterranean diet was linked to lower insulin levels in non-diabetics. This observation is also reported by [23]. Their study opined that higher adherence to the MeDiet is associated with improved insulin sensitivity and selected markers of inflammation in individuals who are overweight and obese without diabetes. Thus highlighting the importance of MetDiet in the management and prevention of Cardiovascular diseases.

The second theme identified from the results of this study was a reduction in vascular event risks among participants. The findings suggest that the Mediterranean diet is beneficial in reducing the incidence of cardiovascular events [34] [38]. In a study conducted by [34], they noticed that the MetDiet was linked to a reduction in vascular event risks like myocardial infarction and vascular death. This observation is in line with the study conducted by [29], where patients with higher adherence to the Mediterranean diet showed a reduction in the risk of myocardial infarction and coronary heart disease mortality. A similar conclusion is also drawn from [22] clinical trials where 1002 patients were randomly administered a Mediterranean diet and a low-fat diet. From the trial, participants who adhered to the Mediterranean diet experienced a significant reduction in the combined incidence of myocardial infarction and cardiovascular death.

While [34] found no significant interaction between Mediterranean diet scores and ischemic stroke, the Mediterranean diet has also been linked with a substantial decrease in the risk of unstable angina, heart failure, stroke, and embolism [22]. Other studies [45] [46] also reported a significant association between greater adherence to the MetDiet and a lower risk of stroke. However, [34] observation that the MetDiet was associated with a reduction of the risk of myocardial infarction is consistent with a clinical trial carried out by [47] on patients with myocardial infarction. Their findings suggest that following a MetDiet had a protective effect on preventing subsequent heart attacks for up to four years after the initial incident.

The findings of the study also indicate an association between the MetDiet and reduced CVD mortality [38]. This is in line with other studies which also observed that high adherence to the Mediterranean diet was associated with lower CVD incidence and mortality [43] [48] [49]. However, their findings offer a perspective on the diet's potential benefits across different ethnic groups. The results showed a significant reduction in CVD mortality risk among African American men and women and Japanese American men and women adhering to the Mediterranean diet but not among Latinos or Native Hawaiians. This observation implies that the effectiveness of the MetDiet in lowering the risk of experiencing major cardiovascular events may vary among different ethnic groups.

In the synthesis of the findings of this review, another common theme observed among the studies selected was that the adherence to the MetDiet was linked with a lower risk of type 2 diabetes among some ethnic groups. Many studies [20] [50] [51] already provide evidence regarding the inverse association between the adherence to a Mediterranean diet and incidence of T2D. However, from the review, we gain a unique perspective on the discrepancy in the association between the MetDiet and type 2 diabetes risk among different minority ethnic groups in the United States. In the study conducted by [40], they report stronger associations between adherence to the Mediterranean diet and a reduced risk of diabetes specifically among black participants compared to whites. This observation is in contrast with some previous studies that have primarily focused on predominantly

white populations and may not have explored racial or ethnic variations in the relationship between the Mediterranean diet and diabetes risk.

The study by [35] also highlights the relationship between adherence to the Mediterranean diet (MedDiet) and the risk of type 2 diabetes across different ethnic groups. Similar to other studies, they observed a significant inverse relationship between MetDiet and T2D among white participants, implying that a higher adherence to the Mediterranean diet was associated with a lower risk of type 2 diabetes. However, adherence to the Mediterranean diet did not demonstrate a significant reduction in the risk of type 2 diabetes among participants from other ethnic groups (Native Hawaiians and Japanese Americans). As a result, this review highlights the need for further investigations to account for racial and ethnic diversity in the research on dietary interventions in the prevention of cardiovascular diseases.

The final theme that became apparent in the synthesis of the results of this study was the reported associations between the MetDiet and an improvement in cardiac structure and function. In the Multiethnic study conducted by [33], they observed that the Mediterranean diet score was associated with a modestly higher Left Ventricular (LV) volume, ejection fraction, and stroke volume. Their study was conducted on Whites, African Americans, Hispanics, and Chinese and reported these associations across all ethnic groups. The result of this study suggests that the Mediterranean dietary pattern is associated with a better LV structure and function. Their finding is also consistent with the observation of [52], who noted that adherence to the Mediterranean diet was linked with a reduced likelihood of developing LV systolic dysfunction and prevented the recurrence of cardiovascular disease events over a follow-up period of two years.

[34] also reported the benefits of the MedDiet on left ventricular (LV) mass. Their findings indicated that greater adherence to the MedDiet was associated with a lower LV mass among Hispanics, non-Hispanic Blacks, and non-Hispanic whites from New York City. Like [33], Gardener *et al.* found no significant interaction between race/ethnicity and the diet score concerning LV mass. This observation is important as it suggests that the benefits of MetDiet on cardiac structure and function are consistent among all populations regardless of racial or ethnic background. Thus, these results suggest the Mediterranean diet can contribute to better cardiovascular health and be a beneficial dietary approach to maintain and improve cardiac function.

## 6. Strengths and Limitations

This systematic review aimed to examine the effect of Mediterranean diets (Met-Diet) on cardiovascular disease prevention among ethnic minorities in the United States. The main strength of this review lies in its rigorous methodology. Although conducted by one reviewer, this review followed a comprehensive search strategy and synthesized a range of studies that provided evidence regarding the beneficial effects of MetDiet on cardiovascular disease prevention among ethnic minorities

in the United States. The studies included in the review employed robust and comprehensive methodologies to assess diet quality and its association with cardiometabolic and cardiovascular outcomes. They utilized well-defined dietary assessment tools, such as the Food Frequency Questionnaire and various diet quality scores, and incorporated diverse lifestyle factors and research designs, including randomized interventions and repeated measures, to enhance the accuracy and reliability of their findings. Thematic analysis allowed for a systematic analysis and interpretation of the data, generating coherent and cogent results. The use of predefined eligibility criteria to screen and select studies also contributed to the reliability of the findings. Thematic analysis allowed for a systematic analysis and interpretation of the data, generating coherent and cogent results.

However, this study has several limitations. In some studies, the diet was measured only at baseline, failing to capture changes over time, leading to imprecise long-term dietary estimates. The review's findings may also be limited by the method used for MetDiet score calculation and the limited representation of some foods and nutrients in guidelines-based indexes. Additionally, only a few studies focused solely on the effect of MetDiet on cardiovascular and cardio metabolic disease outcomes among minority ethnic groups in the United States. There are also concerns about the generalizability of the results due to the specific populations studied, such as participants from Puerto Rico, Hawaii, New York, and California. As a result, future studies should address these limitations by including more diverse ethnic minority populations and employing longitudinal dietary assessments.

## **7. Implications and Recommendations for Practice**

From the results of this study, a few recommendations can be made to improve nursing practice, especially in the care of individuals from ethnic minorities with cardiovascular disease (CVD) risk. The results of this review suggest the beneficial effects of the Mediterranean Diet (MetDiet) on various cardiovascular outcomes.

The results consistently show that adherence to the MetDiet is linked with improvements in cardiometabolic health and reduced risks of cardiovascular diseases. Consequently, comprehensive education and counselling on the benefits of the MetDiet can be provided to patients. This can be achieved through one-on-one sessions and group workshops, where healthcare practitioners can offer tailored dietary advice and meal planning strategies that consider patients' cultural preferences and socioeconomic constraints to ensure that they fully understand nutritional recommendations and the importance of adherence to the MedDiet.

Additionally, healthcare practitioners should provide dietary interventions that align with the culture of a given population. This involves understanding and respecting cultural dietary practices and finding ways to incorporate the principles of MedDiet into traditional diets. By integrating these recommendations into nursing practice, healthcare practitioners can play a crucial role in promoting heart health and reducing disparities in cardiovascular disease risk among diverse populations.

## 8. Conclusions

This systematic review investigated the effect of the Mediterranean Diet (MedDiet) on favourable cardiometabolic outcomes and the prevention of cardiovascular diseases among ethnic minorities in the United States. The findings suggest that MedDiet is associated with substantial improvements in cardiometabolic markers such as waist circumference, BMI, insulin levels, and inflammatory markers, which underscores its potential in managing and preventing cardiometabolic diseases. A higher adherence to the MedDiet is also linked to a reduced risk of major cardiovascular events, including myocardial infarction and vascular death. Additionally, MedDiet is shown to positively affect cardiac structure and function, highlighting its role in enhancing overall heart health.

Consequently, a few recommendations were suggested to improve practices concerning the dietary management of cardiovascular diseases. The review also highlights the need for culturally sensitive dietary interventions and the role of nurses in providing education and counselling to promote the adoption of MedDiet. However, future research should be conducted to understand the long-term impacts of MedDiet on various ethnic groups and investigate strategies to overcome barriers to dietary adherence. By addressing the results and recommendations from this review, healthcare providers and policymakers can work together to reduce disparities in cardiovascular health and improve the quality of life for individuals from ethnic minority groups.

## Conflicts of Interest

The authors declare no conflicts of interest.

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