

Review

Urban Gastronomy and the Mediterranean Diet: A Sustainable Approach for Modern Society

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Abstract

Although the Mediterranean diet (MD) is widely recognized as a healthy dietary pattern, its potential role as a framework for sustainable urban gastronomy has received limited attention. This narrative review synthesizes evidence from nutrition, environmental studies, gastronomy, tourism, and urban food systems. The review explores MD's sustainability dimensions, food waste and urban food systems, cultural heritage, and trends in urban gastronomy. The findings suggest that the MD is a strong model for sustainable urban food futures, combining nutritional adequacy, relatively low environmental impact, and socio-cultural legitimacy. Evidence indicates that Mediterranean-style dietary patterns are associated with lower greenhouse gas emissions, land use, energy use, and water consumption than Western diets, while also remaining comparatively affordable when based on staple plant foods. However, important challenges remain, including affordability, especially across vulnerable social groups; dependence on local supply systems; authenticity under tourism pressure; and the need for effective governance. Overall, the evidence suggests that the MD provides a useful framework for integrating health, sustainability, and cultural heritage objectives within urban food systems. Future research should focus on city-level implementation strategies, food service and restaurant sector practices, and hotel meal planning within urban MD frameworks.

Keywords: Mediterranean diet; urban gastronomy; sustainable food systems; gastronomic tourism; cultural heritage; urban food policy



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1. Introduction

The Mediterranean diet (MD) has attracted sustained scholarly attention over recent decades because of its well-documented health benefits and its broader relevance to sustainability. Traditionally characterized by a high intake of plant-based foods, olive oil as the primary fat source, moderate consumption of fish and dairy products, and limited intake of red meat, the MD is more than a healthy dietary pattern. It is also a lifestyle rooted in seasonality, frugality, conviviality, and cultural continuity [1,2]. In this sense, the MD aligns closely with definitions of sustainable diets that emphasize low environmental impact, food

and nutrition security, and long-term public health. Data from high-income countries provides evidence of this concept being implemented across a range of geographical contexts (including non-Mediterranean ones). For example, multiple hospital systems and culinary medicine programs in the United States have included Mediterranean-style menus in their patient care and wellness initiatives [3]. The Culinary Institute of America Teaching Kitchen Collaborative has been further advocating for MD principles to be implemented across the healthcare facilities in North America [4]. In the case of Northern Europe, a region with little or no overlap between traditional eating habits and Mediterranean ones, Copenhagen and Stockholm have included MD characteristics (i.e., more vegetarian menu options based on seasonality while prioritizing olive oil) into certain public school food programs [5]. In addition, the Mediterranean Diet Foundation of Australia promotes culturally adapted Mediterranean eating patterns using ingredients sourced from the local region in restaurants, at care facilities for older people and schools [6]. These cases illustrate that the MD can indeed be modified for use in any place, but finding an appropriate and sustainable implementation pathway is highly dependent on local food systems, cultural acceptability of the changes to diet and availability of key ingredients, together with institutional support.

In parallel, rapid urbanization is reshaping global food environments. Knorr et al. [7] note that urban living is increasingly associated with away-from-home eating, convenience-oriented food environments, and reduced physical activity, all of which may contribute to greater risk of chronic disease. These changes have made urban food systems a critical site for interventions that seek to connect public health with environmental sustainability. Since many adaptation processes of the MD are present in urban food environments, the concept of urban gastronomy offers a useful lens through which to examine how MD principles may be translated into everyday eating practices.

For the purposes of this review, urban gastronomy refers to the systematic study and strategic integration of a city's culinary assets, spaces, and practices. It functions simultaneously as a physical anchor for public life, an expression of socio-cultural identity, a catalyst for the creative economy, and a critical component of a sustainable urban food ecosystem [8,9]. It encompasses restaurants, hospitality services, public food procurement, local markets, gastronomic tourism, cultural heritage related to food and the policy mechanisms that influence the availability, accessibility, sustainability and cultural identity of food in cities. In this regard, urban gastronomy is not only a culinary practice but an urban governance area connecting public health, environmental sustainability, economic development and cultural heritage. Because these factors influence what food is available, affordable, desirable, and socially valued, urban gastronomy can act as a key mechanism through which healthier and more sustainable dietary patterns are encouraged. The MD is particularly relevant to this point because it emphasizes plant-based foods, local sourcing, seasonal consumption, moderate portion sizes, and shared meals, and it is compatible with many contemporary sustainability goals.

This narrative review examines whether the MD can serve as a useful framework for sustainable urban gastronomy. It addresses three main questions: (1) How does the MD serve as a sustainable model in urban food environments? (2) How does the MD relate to gastronomy, cultural heritage, and current urban food trends? (3) What challenges and tensions arise when attempting to integrate MD principles into modern urban food systems?

2. Methodology

This study was conducted as a narrative review aimed at synthesizing evidence and conceptual perspectives on the MD, sustainability, urban food systems, gastronomy and tourism. The literature search was performed in different electronic databases, i.e.,

PubMed/MEDLINE, Scopus, Web of Science and Google Scholar. It primarily examined publications from 2000 to September 2025, but earlier foundational works were selectively included when conceptually relevant. The search terms included the keywords: MD, sustainable diet, urban gastronomy, food systems, food waste, gastronomic tourism, cultural heritage, food policy, urban food environment and restaurant sustainability. The use of Boolean operators (AND, OR) and the systematic association of keywords (for example: “Mediterranean diet” AND “sustainability” AND “urban”) were implemented.

Sources included studies, reviews or policy documents covering: (i) dietary intakes relevant to the MD; (ii) food systems related to urban settings and specific sectors related to culinary gastronomy, tourism and food service; (iii) food waste, supply chains and/or sustainability frameworks of dietary patterns or interventions addressing a wide range of agricultural product/processes; and (iv) governance/policy/implementation strategies for sustainable food systems. The literature only pertaining to mechanistic studies of clinical disease and not related to diet patterns (e.g., food environment, dietary quality), sustainability or urban issues was excluded. Only English sources were considered. The gray literature from reports by FAO, UNESCO and WHO was also selectively included if giving high-level policy insights or data unavailable in peer-reviewed publications.

The first phase consisted of checking titles and abstracts for relevance. All sources meeting the scope of the review were fully reviewed. Further search was conducted for relevant studies through reference lists of key articles (snowball sampling). The final body of literature highlighted studies that provided empirical evidence on environmental or economical outcomes related to the MD; conceptual frameworks connecting food with sustainability and urbanism; case studies of policy approaches regarding MD implementations in an urban context; and critical reviews covering the tensions between food tourism, authenticity and governance.

This review is organized in four thematic areas: (1) sustainability dimensions of the MD: environmental, economic and nutritional evidence; (2) food waste and urban food systems: inefficiencies and how the MD can contribute to the solution; (3) the MD as gastronomy/culinary heritage: issues regarding UNESCO acknowledgement/cultural impact interpretation, and scope of culinary tourism; and (4) current trends or challenges in urban gastronomy (sustained restaurant practices/intensified tourism directions/overtourism risks/policy strategies for embedding MD). It enables synthesis across multiple perspectives (e.g., nutritional, environmental, economic and socio-cultural) while identifying tensions and research gaps.

This review is not exhaustive. Its aim is not to provide a comprehensive mapping of all of the available literature, but rather to offer an analytically coherent overview of how the MD may function as a framework for sustainable urban gastronomy.

3. The MD and Sustainability

A major reason the MD has been described as sustainable is that it combines nutritional adequacy, lower environmental footprint, and cultural acceptability [1]. The Double Pyramid Model demonstrates that nutritional health and environmental sustainability go hand in hand, as foods recommended for frequent consumption typically have the lowest ecological costs [10]. The visual revision of the MD pyramid by the Italian Society of Human Nutrition also emphasizes that preserving environmental variety and choosing eco-friendly food sources are just as essential as the nutritional components themselves [11]. Nutritionally, the MD provides sufficient macro- and micronutrients for both adults and children while remaining adaptable across different culinary traditions within the Mediterranean basin [12]. Although Mediterranean cuisines differ from one country to another, they share core principles based on legumes, cereals, fruits, vegetables, olive oil, and the moderate use

of animal products. This flexibility supports a wide variety of culturally acceptable meals derived from similar staple ingredients [1]. In addition to these core characteristics, balance and diversity are central to the Mediterranean dietary pattern, reflecting the principle of “everything in moderation”, as excessive consumption negatively affects both individual health and the environment. A varied nutrient intake benefits our bodies, while crop diversity enhances soil health and diminishes reliance on fertilizers. An increased variety of food also fortifies food systems against pests, diseases, and extreme weather events [13].

From an environmental perspective, the literature consistently shows that dietary patterns vary substantially in their ecological burden. Animal-based foods tend to be among the most land-, water-, and energy-intensive food categories, whereas plant-based foods generally exert lower environmental pressures [14]. Because the MD is predominantly plant-based, it is associated with reduced reliance on livestock production and a greater emphasis on fresh produce, legumes, and cereals. This dietary structure can contribute to lower greenhouse gas emissions, reduced land use, and lower water consumption compared with Western dietary patterns [14,15].

Evidence from modeling studies is particularly striking. In Spain, greater adherence to the Mediterranean dietary pattern was estimated to reduce greenhouse gas emissions by 72%, land use by 58%, energy consumption by 52%, and water consumption by 33%, whereas adherence to a Western dietary pattern was associated with increases across these indicators [14]. Beyond these measurable environmental impacts, the MD is also significantly related to ecosystem-level benefits, including biodiversity conservation. The high biodiversity of wild and cultivated species in the Mediterranean area has historically supported a diverse and resilient food supply for local populations [16]. In this respect, the reliance of the MD on a wide range of local cultivated and wild plant species further contributes to the preservation of agrobiodiversity and the maintenance of traditional botanical knowledge systems [17]. These findings strongly support the view that the MD can generate environmental co-benefits alongside health benefits and enhance biodiversity. In a recent comparison of the MD and planetary healthy diet index (PHDI) proposed by the EAT-Lancet commission [18], higher adherence to the PHDI and MD was similarly associated with lower all-cause mortality and had a similar (low) environmental impact [19].

However, this evidence should be critically interpreted. Many of these estimates are based on modeling assumptions and may depend heavily on local production systems, food sourcing patterns, and national dietary baselines. The transferability of such findings to non-Mediterranean or highly globalized urban environments remains insufficiently studied. Environmental gains associated with the MD may be weakened where ingredients are heavily imported, highly processed, or detached from seasonal and local food systems. To address these limitations, the Planeterranean concept extends the MD into a global sustainable nutrition framework emphasizing locally available foods, responsible agricultural practices, targeted policies, and community engagement [20].

Economic considerations are also central to the diet’s sustainability. A common criticism is that healthier diets are more expensive and therefore socially exclusionary. In addition, a recent systematic review of 24 studies found that the MD is cost-effective since it reduces healthcare costs, but that greater adherence is consistently associated with higher household food costs, especially in low-income populations [21]. For example, in Portugal, high adherence was associated with a 21.2% increase in total dietary cost [22]. However, many of its staple foods, including legumes, cereals, fruits, and vegetables, are relatively accessible and affordable in local food markets [23]. Thus, although higher adherence to the MD may modestly increase daily food costs in some settings, the increase appears limited. Tong et al. [24] estimated that high adherence was associated with an average increase of approximately £0.20 per day in the UK Fenland Study, while Lara et al. [25]

found that dietary guidance could improve adherence with little or no substantial increase in expenditure.

Moreover, the apparent cost increase should be balanced against broader social- and health-related savings. Lampropoulos et al. [26], for example, reported that each unit increase in MD score was associated with a reduction in average hospitalization length. Although this does not directly lower food expenditure, it suggests that the MD may contribute to reduced healthcare burdens over time. In addition, recent 2025 Italian guidelines based on comprehensive systematic reviews developed 84 evidence-based recommendations supporting the MD's protective role across multiple chronic diseases [27].

Beyond individual affordability, the MD may also support wider food security goals. Fotakis et al. [28] argue that food insecurity remains a pressing issue both in Greece and globally, and that dietary models based on accessible, minimally processed, locally available staples may offer part of the solution. In this sense, the MD's dependence on seasonal produce, legumes, and other plant-based staples may enhance nutritional adequacy while avoiding some of the price volatility associated with heavily processed or imported foods. Still, affordability is context-dependent, and the social accessibility of the MD in contemporary cities requires further investigation, especially across different income groups.

4. Food Waste and Urban Food Systems

Food waste is one of the most significant inefficiencies in the global food system. Over one-third of food produced for human consumption is estimated to be lost or wasted, generating unnecessary environmental, economic, and social costs [29–31]. In urban contexts, where food systems are highly complex and consumption is often detached from production, waste occurs at multiple stages, including distribution, retail, food service, and household consumption [7].

The environmental implications are severe. Hall et al. [32] estimated that per capita food waste in the United States increased substantially over recent decades, reaching more than 1400 kcal per person per day. This scale of waste corresponded to significant losses in freshwater and fossil energy. In addition, food discarded in landfills generates methane, a greenhouse gas with far greater potential for warming than carbon dioxide over the short term [32]. Improving the efficiency of food systems, therefore, requires action not only on production methods but also on food loss and waste reduction throughout the entire chain [7,33].

The MD may help address this issue, but the evidence here is more suggestive than conclusive. Its emphasis on minimally processed foods, moderate portion sizes, frugality, and traditional food practices appears compatible with lower waste consumption patterns. Many Mediterranean foods can be stored and used flexibly, while fruits and vegetables are often consumed with minimal packaging or prepared in ways that make broader use of edible parts [34,35]. Traditional Mediterranean food cultures also include preservation practices and resource-conscious cooking habits and recipes that may reduce unnecessary waste. However, the literature directly linking MD adherence to measured reductions in household or restaurant food waste remains limited. Much of the argument is theoretical: because the diet promotes moderation, seasonality, and less processed ingredients, it is assumed to generate less waste. This is plausible, but more empirical research is needed to assess whether MD-based menus and urban food service models actually reduce waste in measurable ways.

Beyond household consumption, food waste represents a major challenge within urban gastronomy and hospitality systems. While food waste is a recognized global crisis, its impacts are overwhelmingly concentrated within metropolitan areas, where post-

consumption organic waste routinely accounts for more than half of total urban waste streams [36]. Within the urban gastronomy ecosystem, the food service and catering sectors represent an aggressive source of preventable loss. Empirical tracking reveals that edible waste values consistently range from 15.5% to 17.0% across the commercial hospitality sector [37,38].

Operational data indicates that this waste is bifurcated into back-of-house inefficiencies and consumer behavior; notably, approximately one-third of all food waste generated in food service environments occurs directly as plate waste left by consumers [37]. Recent comparative urban assessments demonstrate that structural attributes—such as advanced digital inventory tracking and targeted staff education regarding demand uncertainty—serve as the primary determinants in successfully reducing surplus production in high-density urban dining markets [39].

While these patterns highlight the systemic nature of food waste in urban environments, they also emphasize the need for targeted interventions in urban institutional settings such as schools, universities, or/and public catering facilities. A recent scoping review [40] examined nutritional intervention programs promoting complete food usage and the reuse of clean leftovers to minimize food waste. These interventions included interactive lessons, playful activities and menu preparation. For example, in Portuguese primary schools, children participated in planning a weekly menu to reduce waste and created posters promoting waste reduction in the school canteen [41]. Similarly, interventions in primary schools examined students' willingness to eat 'imperfect' fruits and vegetables, alongside online training for food waste reduction [42]. The Brighter Bites program (weekly fresh fruit and vegetable distribution and nutrition instruction) resulted in fewer wasted fruits and vegetables recorded in each meal. Further, parents were educated through recipe demonstrations, while a mobile app recorded food choices and waste in real time [43]. The effectiveness of such interventions is supported by quantitative evidence. In the Brighter Bites program, schools implementing the intervention recorded significantly lower fruit and vegetable waste compared with control schools, while students simultaneously increased their consumption of fresh produce. Specifically, fruit waste decreased by approximately 13% and vegetable waste by 18%, indicating that nutrition education combined with improved access to healthy foods can both reduce food waste and improve dietary quality [43]. Similarly, the FEAST program demonstrated improvements in food literacy, sustainability knowledge, and willingness to consume a wider variety of fruits and vegetables among schoolchildren, supporting the role of educational interventions in promoting more sustainable consumption behaviors [41]. In Greece, S-FAN, a sustainable food awareness program, is ongoing, led by registered dietitians [44] to prevent domestic food waste. The program incorporates diverse educational tools, including sustainable cooking seminars, focus groups, social media engagement, podcasts and 3D animated content addressed to children, university students and the general public (Figure 1). Although S-FAN provides an example of a national food waste awareness initiative, formal evaluation of its long-term effectiveness in reducing household food waste is still ongoing, and outcome data is not available yet.

The project "S-FAN program (Sustainable Food Awareness Network)" is implemented in the framework of H.F.R.I.'s 6th Call of "Science and Society" Action, entitled "Contemporary Nutritional consciousness" (H.F.R.I. project number: 29405).



Figure 1. Community interventions to reduce food waste: the example of the S-FAN program (Sustainable Food Awareness Network).

5. The MD as Gastronomy and Cultural Heritage

The MD should not only be considered from nutritional and environmental perspectives. It is also a gastronomic and cultural system. Although Mediterranean societies differ in language, religion, and local customs, their cuisines have historically developed around related ecological conditions, agricultural practices, and trade networks [1,45]. As a result, shared ingredients have generated diverse but interconnected culinary traditions. This diversity is one of the diet's major strengths. While the number of core ingredients may be relatively limited, the variety of ways in which they are combined, preserved, and prepared is considerable [46]. This allows the MD to sustain not only nutritional adequacy but also gastronomic richness. Fresh seasonal ingredients, traditional cooking methods, and culinary creativity together make the diet both health-promoting and culturally meaningful. UNESCO's recognition of the MD as intangible cultural heritage reinforces this point. UNESCO [2] describes the MD as a set of skills, knowledge, rituals, symbols, and traditions extending from landscape and cultivation to preparation and communal consumption. Eating together is framed not merely as a social habit but as a foundation of cultural identity, continuity, and intergenerational transmission. Markets, in turn, are identified as key spaces where this heritage is reproduced through everyday exchange.

For this reason, the MD contributes to gastronomy in three interrelated ways: it provides nutritional value, sensory pleasure, and social meaning. Communal eating, hospitality, and the sharing of recipes and food practices reinforce bonds within families and communities [1,46]. This cultural embeddedness gives the MD a socio-cultural legitimacy that many contemporary "healthy diets" lack. At the same time, the relationship between authenticity and adaptation deserves more critical attention. As a living heritage, the MD is not static. It evolves across time and place. This raises an important question for urban gastronomy: how can Mediterranean-diet principles be adapted to modern city life without reducing them to stylized branding or commercial clichés? This tension between preservation and reinvention is central to the diet's future relevance.

6. Current Trends in Urban Gastronomy and MD Integration

Contemporary urban gastronomy increasingly emphasizes sustainability, local identity, and experiential value. One of the strongest trends is the growing interest in local and seasonal ingredients, low-waste production, and nutritionally meaningful food offerings [47]. In many cities, restaurants and markets are adopting sourcing practices that reduce food miles and support local producers. These developments align closely with MD principles and suggest a possible pathway for embedding the diet into urban food systems.

Urban gastronomy also functions as a form of place-making. Food is not only consumed; it is also used to express identity, differentiate destinations, and create territorial value. Rinaldi [48] emphasizes that gastronomy can connect place, people, and production systems, linking culinary practices to local identity and sustainable place development. This perspective is especially useful because it moves the discussion beyond nutrition alone and situates food within governance, branding, and socio-cultural development.

At the same time, gastronomic tourism has expanded rapidly. Urban consumers often seek culinary experiences that are perceived as authentic, local, and immersive. The recent literature shows that gastronomic tourism now includes observational, experiential, and participatory forms, such as food festivals, local foods tastings, wine tourism, wine pairing, cooking classes, agrotourism and chef-led workshops [49]. Technology has also expanded these experiences, especially since the COVID-19 period.

Mediterranean-style menus are increasingly incorporated into hospitality and wellness-oriented tourism initiatives. The MD is favored by hotel operators because it balances luxury and indulgence with science-backed health benefits. Indeed, Mediterranean menus offer both operational and business advantages (broad inclusivity of a variety of dietary preferences, i.e., vegans, vegetarians, and health-conscious guests without requiring a separate “special diet” list): marketable wellness, as hotels can market these menus as “Heart-Healthy” or “Functional Gastronomy” to attract long-stay or luxury wellness travelers; sustainability and local sourcing; and guest satisfaction and experience due to the “feel-good” factor; visual appeal of colorful vegetables, fresh herbs, and golden olive oils; and communal dining by sharing small plates in a professional hotel environment [50].

Moreover, culinary medicine is an emerging multidisciplinary topic that bridges clinical nutrition and the culinary arts. It focuses on translating evidence-based dietary recommendations into practical and culturally appropriate meals that support health promotion and disease management. By combining nutrition science with food preparation skills and eating behaviors, culinary medicine aims to improve adherence to healthy dietary patterns while preserving the enjoyment of food. As interest in preventive health and wellness continues to grow, these approaches create new opportunities for the integration of MD principles into healthcare, hospitality, and urban food environments [51].

Survey evidence from Greece suggests that these trends may also be gendered. Matalas et al. [52] found that women were more likely than men to be motivated by cultural experience, excitement, interpersonal relations, and health concerns when consuming local foods. They also reported higher rates of dining in Greek restaurants and taverns. These findings support the idea that gastronomy is not only about sustenance but also about identity, emotion, and social experience.

Yet the growth of gastronomic tourism also creates tensions. Overtourism can generate overcrowding, inflate local prices, and encourage commercialization that undermines culinary authenticity [53]. Restaurants may alter recipes, standardize menus, or rely on imported goods in order to satisfy visitors’ expectations, thereby weakening local food systems and reducing demand for local produce [54,55]. In this respect, tourism can simultaneously support and threaten sustainable gastronomy. This contradiction is important. Tourism can create economic opportunities and renew interest in regional food cultures, but it can

also erode the very authenticity on which its appeal depends. Therefore, the integration of MD principles into urban gastronomy requires governance arrangements that protect local producers, encourage seasonal sourcing, and resist excessive commodification.

Indeed, there are multiple cases around the world where overtourism has contributed to changing traditional food environments. One example is Barcelona's famous market Boqueria. Over time, due to tourists' increasing demands, the market started selling more pre-cooked food instead of fresh groceries. Although tourism brought financial benefits, concerns were introduced regarding the displacement of locals and the commercialization of food heritage [56,57].

Another example comes from Venice. The proliferation of businesses aimed at attracting tourists contributed to the change in retail environment. In particular, a decrease in traditional food store catering was observed due to the emergence of restaurants and shops targeting tourists. Moreover, high rents and the dependence of small shops on tourists' demand became serious issues [58]. This case underlines the fact that overtourism can negatively affect both traditional food culture and the accessibility of grocery stores for residents [59].

The third example of the impact of overtourism on gastronomic sustainability is the city of Dubrovnik. Tourism led to the development of the hospitality sector and increased interest in local cuisine. While there are good benefits of tourism, there are also negative impacts to consider, including the standardization of menus to satisfy tourists' expectations, which reduces food diversity and the connections between foods and local producers [60]. This has been seen in other heritage sites where food is now marketed as a tourist attraction instead of being a part of how one's culture is alive and thriving [55].

The socio-spatial pressures of overtourism have frequently been critiqued through qualitative frameworks, yet modern urban analytics provide a highly quantifiable view of tourist behavior and destination saturation. Overtourism is rarely uniform; rather, it manifests as a severe, spatially uneven distribution of human density within the urban fabric [61]. To empirically map these dynamics, contemporary research utilizes big data harvested from Location-Based Social Networks (LBSNs), combining geolocated heatmaps with spatial data from platforms like TripAdvisor and Foursquare [61,62]. By converting millions of user check-ins into precise spatial coordinates, researchers can definitively isolate "Areas of Interest" (AOIs) where tourist consumption clusters [61]. Case studies in historic and capital cities demonstrate that when tourist densities within these culinary and cultural AOIs breach local carrying capacities, it triggers a measurable "tourism monoculture" that displaces traditional local retailers, accelerates residential gentrification, and strips multi-use civic spaces into monocultural zones of commercial consumption [63].

The above studies suggest that overtourism can help to create new jobs, promote regional foods and increase awareness of local culinary traditions on a global level. However, in parallel, it induces greater commercialization and dependence upon non-locally sourced products. This in turn may lead to reductions in food's authenticity and availability for the local residents. Therefore, effective urban food governance is critical in order to balance the economic rewards with protecting cultural identity, the local supply chains and sustainable food practices [64]. To promote MD adherence, cities can leverage several policy strategies at an institutional, regional, and environmental level. A primary entry point is food procurement and institutional feeding, where urban governments integrate Mediterranean principles—such as prioritizing plant-based proteins, healthy fats, and fresh produce—into school lunch programs, public facilities, and workplace cafeterias. Research examining 36 urban food policies from cities participating in the Milan Urban Food Policy Pact found that approximately 44% incorporated public procurement as a tool for change [65]. Analysis of these 36 policies from these signatory cities showed that most

(81%) were from high-income countries and considered health (86%), equity (81%), and the broader food system beyond dietary consumption (94%) [66]. In addition, fruit and vegetable incentive programs have shown positive effects in reducing food insecurity and increasing consumption among lower-income populations [67]. Interestingly, subsidies are effective across several income levels (not just low-income populations) when they serve as incentives rather than simple price reductions. For maximum effectiveness, subsidies should target populations facing affordability barriers, focus on families with young children to establish healthy preferences, and be sustained long enough to shift habits [68].

In addition, cities can strengthen urban regional food systems to bridge the gap between local producers and consumers. By supporting farmers' markets, community-supported agriculture, and urban gardening, municipalities ensure a steady supply of the fresh, seasonal ingredients central to the MD [69]. These initiatives do more than provide food; urban agriculture specifically has been shown to improve overall diet quality while simultaneously boosting physical activity levels.

The MD started in the Mediterranean regions, but evidence shows that the MD is being used in high-income countries that speak English (USA, Australia, UK), where hospitals are implementing wellness programs based on culinary medicine and lots of nutrition education programs are using Mediterranean food principles [3,4,6]. In those countries, the MD is not being used as an urban food system model; rather, it is a way to provide nutrition support to patients and an educational tool for consumers. Nordic countries have had some success adapting MD principles to their local schools and purchasing supplies, but Nordic countries often integrate elements of the MD with the traditional Nordic patterns [5]. Rapidly developing urban areas in middle-income countries (i.e., China, India, Brazil), where many people are transitioning to urban living, do not have as many examples of MD-influenced urban food policies or restaurants providing MD-style menu items on a large scale. This is probably due to several barriers: cultural unfamiliarity with Mediterranean foods, and especially olive (which must be imported); high cost of Mediterranean foods when compared to the costs of ultra-processed foods; and the availability of an infrastructure that would help connect Mediterranean foods with local farmers [5,6].

Some tourism sectors outside the Mediterranean may offer "Mediterranean-style" food, but this is usually marketed as a premium or special occasion experience rather than an everyday option. Overall, although the MD has gained global recognition as a healthy food model and has been incorporated in clinical nutrition guidelines worldwide [6,70], its translation into comprehensive urban gastronomy frameworks, including restaurants, hotels, markets, public catering and food procurement systems, is still mainly confined to Mediterranean countries and some Northern European cities with strong sustainable food governance.

A circular economy strategy in urban gastronomy further increases MD integration by infusing ideas of regeneration, resource efficiency, and local value retention into food systems. Within the context of the MD, a circular economy model could reinforce the use of seasonal, locally sourced food ingredients and traditional preservation practices that minimize environmental impact [71]. Sustainable gastronomy practices in micro-, small-, and medium-sized firms largely comprise local procurement of raw materials, waste management, and sustainable packaging, all of which are strongly associated with the ideas of the circular economy. At the same time, the integration of authenticity and product innovation enhances the value of local food systems, such as the MD [72].

Finally, achieving an increased adoption of these habits requires strategic food environment planning. It is essential for cities to address neighborhood disparities by improving access to nutritious options while actively reducing ultra-processed food avail-

ability [73]. By reshaping the physical landscape of food availability, urban planners can ensure that the health benefits of the MD are accessible to all residents, regardless of their socioeconomic status.

7. Discussion

The reviewed literature suggests that the MD offers a compelling framework for sustainable urban gastronomy because it integrates environmental sustainability, economic pragmatism, and cultural legitimacy. First, existing modeling studies consistently indicate that Mediterranean-style dietary patterns have lower greenhouse gas emissions, land use, energy use, and water demand than Western diets [14,15]. Second, although some studies report modest increases in food costs, the diet appears relatively affordable overall, particularly when based on staple foods and supported by dietary guidance [23–25]. Third, its status as UNESCO-recognized cultural heritage gives it a socio-cultural depth that strengthens its acceptability and symbolic value [2].

At the same time, this review also highlights important tensions. The benefits of the MD depend partly on the conditions under which it is implemented. Its environmental advantages may be reduced when urban food systems rely on imported ingredients, long supply chains, or highly commercialized restaurant models. Its affordability may vary across cities and social groups. Its cultural value may be decreased when gastronomy is transformed into standardized tourism consumption. In other words, the MD cannot simply be transplanted into urban contexts as a fixed recipe; it must be supported by local supply capacity, appropriate governance, and careful adaptation.

While the MD offers a robust model for sustainability, its transition from a rural heritage to an urban reality depends heavily on institutional frameworking. Governance acts as the “connective tissue” between dietary principles and urban infrastructure. A key development in this area is the rise in Urban Food Policy Pacts, such as the Milan Urban Food Policy Pact, which encourages cities to integrate health, environment, and social equity into a single administrative agenda [65,74]. In practice, local governments must protect municipal markets—the traditional nodes of Mediterranean food systems—against the encroachment of standardized supermarket chains and gentrification [75–77]. Furthermore, public procurement serves as a powerful economic lever; by mandating seasonal, plant-forward, and locally sourced MD-aligned menus in schools and hospitals, cities can create a stable “pull factor” for regional producers [77,78]. However, governance must also navigate the “food environment” paradox: in many globalized cities, the ingredients of the MD are physically available but socially inaccessible due to “food mirages,” where high prices in gourmet urban gastronomy outlets exclude lower-income populations. Effective governance, therefore, requires a combination of zoning protections for small-scale vendors, subsidies for seasonal produce, and culinary education programs that reframe the MD not as a luxury brand, but as a resilient urban utility. Without supportive institutions, local sourcing systems, culinary education, and policies that protect authenticity, the sustainability potential of the MD may remain largely theoretical.

The sustainability of Mediterranean-inspired urban gastronomy also depends on its social inclusiveness. This perspective shifts attention from the availability of food to questions of accessibility, affordability, and participation across different social groups. Indeed, according to UNESCO [79], the MD should also be viewed as a strategic tool for urban planners to enhance biodiversity and social resilience through “food-sensitive” urban design. In this context, the MD is usually said to be affordable when relying on staple plant-based foods; however, access can be inequitable among different demographic groups. For example, many low-income households face financial barriers to accessing affordable healthy food (especially in urban areas where fresh fruit/vegetables are more ex-

pensive than energy-dense processed foods) [23,24]. Other groups may also have difficulty accessing the types of foods they eat due to migration or cultural diversity, which may affect their ability to stick with a Mediterranean-style dietary pattern. Lastly, age-related issues (e.g., mobility issues, isolation) may pose a barrier for older adults in accessing fresh food stores. Food insecurity and other forms of urban food environment inequities may also preclude some people from obtaining healthy food, even when it is available [28,66]. Addressing urban food environment inequalities requires targeted policy interventions (e.g., providing subsidies for healthy foods; supporting local food markets; developing culturally appropriate nutrition programs; creating Voluntary Action Plans for urban food policies) that yield equitable, sustainable food access for all people. These inequalities are not experienced uniformly. Rather, they manifest differently across social groups, particularly among low-income households, migrant communities, and older adults, each of whom encounters distinct barriers within contemporary urban food environments. When evaluating the urban foodscape, a stark asymmetry emerges between affluent consumers driving the creative culinary economy and marginalized populations navigating structural barriers [80]. For low-income groups, municipal efforts to leverage gastronomy as a creative tool for urban attraction and branding often manifest as a localized ‘food mirage’ [9,81]. High-end, organic, or culinary-centric spaces proliferate geographically to draw tourist capital, yet they remain entirely inaccessible financially to the neighborhood’s original, lower-income residents. For migrant families, food environments represent a complex matrix of resilience and vulnerability. Traditional foodways act as primary conduits for social capital, cultural continuity, and informal entrepreneurship [82]. However, aggressive urban regeneration projects and strict sanitization zoning often displace the very street food hubs and informal market structures that sustain these diaspora networks [80]. Interventions must therefore shift from punitive regulation to supportive formalization, such as municipal micro-grants for ethnic food entrepreneurs.

Although economic and cultural barriers are particularly evident among low-income and migrant populations, urban food access inequalities are primarily driven by age-related factors. For older adults, the challenge is often less a matter of cultural inclusion and more one of physical and spatial accessibility. Concurrently, older adults face unique physical and digital exclusions within modern urban gastronomy. As traditional brick-and-mortar neighborhood grocery stores are increasingly replaced by boutique dining or digitized “dark kitchens” (delivery-only hubs), less digitally connected or mobility-impaired older populations experience localized food isolation [83,84]. Sociological data demonstrates that for seniors, food purchasing is inherently tied to active physical access and social interaction [84,85]. Therefore, an age-friendly urban gastronomy intervention requires the preservation of traditional, walkable, open-air municipal markets, paired with localized, non-digital community food hubs that merge nutritional support with active civic co-presence.

Translating the tailored interventions presented in Table 1 into effective municipal action requires a robust framework of urban food governance. Urban food systems cannot be successfully managed through siloed, top-down municipal departments; rather, they require integrated, cross-sectoral planning agendas [86].

Table 1. Differential impact matrix and tailored urban gastronomy policy interventions across vulnerable populations.

Target Population	Socio-Spatial Barriers in Urban Gastronomy	Cultural and Nutritional Impacts	Tailored Intervention Pathways (Urban Policy)
Low-Income Groups	- Residence in urban “food deserts” or “food swamps” dominated by fast-food outlets [87]. - Spatial exclusion from highly branded and gentrified “culinary districts” designed primarily for city attraction [9,81].	- Higher incidence of diet-related chronic diseases [88]. - Nutritional insecurity driven by economic inflation and localized premium pricing [89].	- Subsidized Mobile Markets: Deploy municipal food trucks offering fresh produce to underserved neighborhoods [86]. - Zoning Incentives: Provide tax credits for fresh food retailers located in designated food deserts [80,87].
Migrant and Diaspora Families	- Informality in food commerce (e.g., unlicensed street vending) [90]. - Vulnerability to urban redevelopment displacing traditional ethnic food markets [80].	- Risk of losing intangible cultural heritage [80]. - Food serves as vital source of social capital and economic survival yet faces regulatory exclusion [82].	- Incubator Kitchens: Establish low-cost, licensed, municipal culinary incubators to formalize migrant food enterprises [1]. - Cultural Heritage Zoning: Legally protect traditional ethnic food markets from speculative real estate gentrification [80,91].
Older Adults	- “Food mirages” where healthy food is physically nearby but financially or physically inaccessible [81]. - Restricted mobility in car-centric or poorly designed urban transit zones [87].	- Social isolation leads to malnutrition [85,86]. - Dependency on digital delivery applications that lack senior-friendly interfaces [83,92].	- Decentralized Hubs: Integrate community dining spaces and congregate meal programs into existing senior centers [93]. - Age-Friendly Infrastructure: Implement pedestrian-first urban design around traditional open-air municipal markets [86].

The structural viability in the tailored intervention pathways outlined in Table 1 is supported by a growing body of localized empirical trials and proven public health interventions. For instance, recent evaluations of urban food environments demonstrate that municipal mobile markets directly mitigate geographic disparities by providing lower-income cohorts and isolated seniors with consistent access to fresh food choices aligning with the Mediterranean diet [93,94]. Where localized clinical data explicitly isolating a ‘Mediterranean diet’ paradigm is limited—such as the creation of municipal incubator kitchens or cultural heritage zoning—these pathways are structurally modeled after analogous programs with documented efficacy in supporting ethnic entrepreneurship and general food assistance planning [1]. Extrapolating these established frameworks to municipal gastronomy policies ensures that structural interventions go beyond decorative urban aesthetics, delivering measurable improvements in dietary equity and cultural preservation.

Contemporary governance frameworks emphasize that systemic food security and spatial justice are achieved when cities transition toward collaborative local models that actively manage multi-stakeholder food policies, shifting conceptualization towards the

“new food equation” [95]. More recently, research underscores that these local initiatives act as critical structural nodes connecting municipal implementation with international sustainable development frameworks and transnational policy agendas [96]. By embedding initiatives such as subsidized mobile markets, incubator kitchens, age-friendly food hubs, or cultural heritage zoning within a formalized city-wide food strategy, local authorities can move beyond fragmented ad hoc projects and build long-term institutional resilience.

For non-Mediterranean urban settings, cultural adaptation of the MD pattern may be essential for long-term adherence [97]. This requires preserving core health-promoting elements and nutritional composition while adapting to local food systems, preferences, and cultural contexts. Formal cultural adaptation frameworks should identify population-specific barriers (food availability, cost, taste preferences) and develop strategies to overcome them. Nevertheless, the success of such adaptations ultimately depends on how individuals perceive food choices in their everyday lives. Importantly, these structural challenges are deeply connected with individual decision-making processes. The ethical dilemmas associated with food choices are intricate and frequently result in mixed decisions. Since moral viewpoints are influenced by personal worldviews, incorporating ethics education is crucial—particularly for those in professions (i.e., hospitality professionals, food service managers, and policymakers) that influence modern urban food systems [98].

This review also reveals several research gaps. There is still limited evidence on how MD principles are implemented at the city level, particularly in non-Mediterranean urban settings. More research is needed on restaurant- and hotel-sector adoption, menu design, procurement strategies, consumer acceptance, and measurable effects on food waste. Comparative case studies across cities would be especially valuable. Future work should also examine how urban food policy, tourism management, and local food governance can support Mediterranean-diet-based gastronomy without encouraging exclusion, gentrification, or cultural simplification.

Finally, this review has limitations. It is a narrative rather than systematic review. Although selection for diverse and representative studies was intentional, selection bias cannot be eliminated. It also relies mainly on the English-language literature and a limited set of policy and conceptual sources. These constraints should be acknowledged when interpreting the conclusions.

8. Conclusions

The MD should be considered not only as a healthy dietary model but also as a practical and culturally grounded framework for urban gastronomy. The literature indicates that it has significant potential to support more sustainable urban food systems through lower environmental impacts, relatively accessible food patterns, and strong cultural value. At the same time, successful integration of Mediterranean-diet principles into urban food environments depends on more than consumer choice alone. It requires governance mechanisms, support for local and seasonal food systems, and careful management of the tensions between authenticity, commercialization, and tourism.

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Abbreviations

The following abbreviations are used in this manuscript:

MD Mediterranean Diet
PHDI Planetary Health Diet Index

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