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MEDITERRANEAN DIET IN THE WESTERN BALKANS

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ABSTRACT

The Mediterranean diet is considered an example of sustainable diets and an intangible cultural heritage of the whole humanity. However, attention to the Mediterranean diet changes from a country to another even within the Euro-Mediterranean region. In this context, this paper analyses the state of research on the Mediterranean diet in the Western Balkans (viz. Albania, Bosnia and Herzegovina, Croatia, Kosovo, North Macedonia, Montenegro, and Serbia). In particular, it explores whether and how environmental, economic, sociocultural, and nutrition-health aspects related to the sustainability of the Mediterranean diet are addressed. A search performed in June 2021 on the Web of Science returned 68 documents, and 41 of them were included in the systematic review. Most of the selected documents deal with Croatia, especially island regions, and focus on health-nutrition aspects while other sustainability dimensions are generally overlooked. The scholarly literature shows that higher adherence to the Mediterranean diet is associated with reduced risk of obesity, different non-communicable diseases (e.g. diabetes, cardiovascular diseases, cancers, metabolic syndrome) as well as mental illnesses. However, it also highlights a decrease in the Mediterranean diet adherence even in Mediterranean/Adriatic territories. Interestingly, some recent studies showed a shift towards the Mediterranean diet during the COVID-19 lockdown even among adolescents. The analysis suggests the need to adopt a holistic approach in studies on the Mediterranean diet to better understand the relationships between the sustainability dimensions and operationalize its contribution to the transformation of food systems and the achievement of the Sustainable Development Goals in the Mediterranean region.

Keywords: *Mediterranean, COVID-19, health, nutrition, sustainable diets.*

INTRODUCTION

The Mediterranean diet (MD) is considered nowadays as an example of sustainable diets (Burlingame & Dernini, 2011). It was first presented by Ancel Keys in the seven countries study (Keys, 1970; Keys et al., 2017), and it was inscribed in 2010 by the United Nations' Educational, Scientific and Cultural Organization

(UNESCO) on the Representative List of the Intangible Cultural Heritage of Humanity (UNESCO, 2010). The Mediterranean diet is the result of the millennial history of the Mediterranean (Berry et al., 2011) and is characterized by its strong links to the food cultures and traditions of the different Mediterranean countries. The general term 'Mediterranean diet' implies a common dietary pattern in Mediterranean countries, although there are differences in the dietary patterns of the Mediterranean populations. Indeed, Mediterranean diets are far from homogeneous, since they involve a wealth of typical products and are extremely varied. This 'dietary polymorphism' partially reflects religious and cultural differences (Berry et al., 2011). The Mediterranean diet not only offers considerable health benefits (Kastorini et al., 2011; Keys et al., 2017; Serra-Majem et al., 2006; Sofi et al., 2008) but also respects the environment (Aboussaleh et al., 2017, 2020; Galli et al., 2017). Indeed, the Mediterranean diet, as highlighted in the Med Diet 4.0 framework (Dernini et al., 2017), has multiple sustainability benefits: 1) recognized and well-documented major health and nutrition benefits, 2) low environmental impacts and richness in biodiversity, 3) high positive local economic returns, and 4) high social and cultural value of food.

Despite its well-documented multiple and multifaceted benefits, recent data show a decline in adherence to the Mediterranean diet in Mediterranean countries (Belahsen & Rguibi, 2006; da Silva et al., 2009; León-Muñoz et al., 2012; Naja et al., 2021). Paradoxically, just as the Mediterranean diet is becoming more popular in the world and increasingly recognised by the international scientific community, the Mediterranean populations are moving away from this dietary model (Lacirignola & Capone, 2009; Naja et al., 2021). In this context, Dernini et al. (2017), and more recently Dernini and Capone (2021), called for a revitalization of the Mediterranean diet by improving its current perception (especially among the young) not only as a healthy diet but also as a sustainable lifestyle model.

In this context, the present article analyses the state of research on the Mediterranean diet in the Western Balkans (viz. Albania, Bosnia and Herzegovina, Croatia, North Macedonia, Montenegro, Kosovo and Serbia). Most of the target countries in this article (viz. Bosnia and Herzegovina, Croatia, Montenegro, North Macedonia and Serbia/Kosovo) were part of the Former Yugoslavia and included in the seven countries study by Ancel Keys (Keys, 1970; Keys et al., 2017). However, interest in the Mediterranean diet does not only change from a country to another but also over time. In particular, the article explores whether and how environmental, economic, sociocultural, and nutrition-health aspects related to the Mediterranean diet sustainability are addressed in the scholarly literature.

MATERIAL AND METHODS

The article is based on a systematic review of all documents indexed in the Web of Science (WoS). A search was performed in June 2021 on WoS using the search query *"Mediterranean diet" AND (Balkan OR "Southeast* Europe" OR Albania OR Bosnia OR Croatia OR Macedonia OR Montenegro OR Kosovo OR Serbia)*

and returned 68 documents. Three eligibility criteria were considered: geographical coverage (viz. dealing with at least one Western Balkan country), thematic focus (viz. addressing the Mediterranean diet), and document type (viz. research articles, book chapters or conference papers; reviews were excluded). Following the analysis of titles, abstracts and full-texts, 27 documents were excluded. Therefore, 41 documents were included in this systematic review (Table 1).

RESULTS AND DISCUSSION

The analysis of the geography of research shows that different attention is devoted to the Mediterranean diet in all Western Balkan countries. Indeed, the lion's share of studies deals exclusively with or include Croatia i.e. 30 out of 41 studies (Table 1). This is rather normal and somehow expected as Croatia is the only big country with a long Adriatic coast and a large share of land area with Mediterranean climate in the region; Albania and Bosnia and Herzegovina have Adriatic coasts, but the remaining countries (viz. North Macedonia, Kosovo, Serbia) are landlocked ones. Many of the articles dealing with Croatia provide comparisons between island regions (e.g. Dalmatia) and continental ones (e.g. Slavonia). The landlocked countries are generally considered only in multi-country studies where they are taken as examples of non-Mediterranean countries e.g. North Macedonia (Quarta et al., 2021) and Serbia (Novak et al., 2017; Willey et al., 2020).

Most of the analysed studies refer to adults but some address specifically non-adults such as children (Salcin et al., 2019) or adolescents/teenagers (Cena et al., 2021; Dragun et al., 2020). As for the studies on adults, while most address the whole population, others focus on specific groups such as pregnant women (Havaš Auguštin et al., 2020), breastfeeding women (Krešić et al., 2013), workers (Jovanović et al., 2020; Žeželj et al., 2018) or elderly people (Vrdoljak et al., 2014).

Table 1. Overview of studies on the Mediterranean diet in the Western Balkans.

Study	**Country/Region**	**Subjects/Target group**	**Disease(s)**
Sulejmani et al. (2021)	Kosovo	Adults	Obesity
Quarta et al. (2021)	Europe[1]	Adults	Obesity
Marendić et al. (2021)	Croatia	Adolescents and adults (students)	--
Sadiku et al. (2021)	Albania	Adults	Erosive reflux esophagitis
Cena et al. (2021)	Euro-Mediterranean[2]	Adolescents and young adults (health sciences students)	Obesity
Dragun et al. (2020)	Croatia	Adolescents/Medical Students	Psychological well-being

Study	Country/Region	Subjects/Target group	Disease(s)
García-Conesa et al. (2020)	Europe[3]	Adults	--
Havaš Auguštin et al. (2020)	Croatia	Pregnant women	---
Willey et al. (2020)	Global[4]	Adults	Obesity and type 2 diabetes
Veček et al. (2020)	Croatia	Adults	Metabolic syndrome
Jovanović et al. (2020)	Croatia	Working population	Metabolic syndrome
Guiné et al. (2019)	Mediterranean[5]	Adults	--
Ahmed et al. (2019)	Global[6]	--	--
Salcin et al. (2019)	Croatia	Preschool children	Obesity
Salvatore et al. (2019)	Croatia	Adults	Mental distress
Žeželj et al. (2019)	Croatia	Working population	--
Božina et al. (2018)	Croatia	Adults	Metabolic syndrome
Žeželj et al. (2018)	Croatia	Working population	Cardiovascular diseases
Sikic et al. (2017)	Croatia	Adults	Cardiovascular diseases
Chang et al. (2017)	Global[7]	--	--
Štefan et al. (2017)	Croatia	Young adults/university students	Obesity
Novak et al. (2017)	Lithuania and Serbia	Adolescents	Obesity
Bosanac et al. (2016)	Croatia	Adolescents	Obesity
Kolčić et al. (2016)	Croatia	Adults	--
Mone et al. (2016)	Albania	Adults	Gastroesophageal reflux
Papandreou and Tuomilehto (2014)	Global[8]	Adults	Coronary heart disease (CHD)
Vrdoljak et	Croatia	Elderly population	--

Study	Country/Region	Subjects/Target group	Disease(s)
al. (2014)			
Višković et al. (2013)	Croatia	Adults (HIV-infected patients)	Subclinical atherosclerosis
Ivezić-Lalić (2013)	Croatia	Adults	Metabolic syndrome
Sahay et al. (2013)	Croatia	Adults	Metabolic syndrome
Krešić et al. (2013)	Croatia	Breastfeeding women	--
Missoni (2012)	Croatia	--	Various diseases
Dzono-Boban et al. (2012)	Croatia	0-64 years	Cardiovascular diseases
Damjanović et al. (2009)	Bosnia and Herzegovina	Adults	Rheumatoid arthritis
Materljan et al. (2009)	Croatia	Adults	Multiple sclerosis and cancers
Kolcić et al. (2009)	Croatia	Adults	Hypertension and obesity
Deka et al. (2008)	Croatia	Adults	Metabolic syndrome
Buretić-Tomljanović et al. (2007)	Croatia	Adults	Body height and craniofacial traits
Pucarin-Cvetković et al. (2006)	Croatia	Adults	Obesity and cardiovascular diseases
Noah and Truswell (2003)	Global[9]	--	--

[1] Spain, Portugal, Italy, Greece, Cyprus, Bulgaria and North Macedonia.
[2] Croatia, Italy, Lebanon, Poland, Romania, Spain and Turkey.
[3] Greece, Portugal, Italy, Spain, Cyprus, North Macedonia and Bulgaria.
[4] Argentina, Germany, Poland, Serbia, Slovakia, Slovenia, Spain, Turkey and USA.
[5] Croatia, Egypt, Italy, Greece and Portugal.
[6] Albania, Australia, Brazil, Grenada, Qatar, Netherlands, Sweden, Thailand, UK and USA.
[7] Finland, USA, Netherlands, Italy, Greece, Japan and Former Yugoslavia (Croatia and Serbia).
[8] Finland, USA, Netherlands, Italy, Greece, Japan and Former Yugoslavia (Montenegro and Serbia).
[9] Australia, Spain, France, Italy, Malta, Croatia, Bosnia, Albania, Greece, Cyprus, Turkey, Syria, Lebanon, Israel, Egypt, Libya, Tunisia, Algeria and Morocco.

The selected documents focus on health-nutrition aspects while environmental, economic and socio-cultural issues are generally overlooked. One of the few exceptions is the study of Ahmed et al. (2019) that analyse whether and how sustainability is integrated into National Dietary Guidelines in randomly selected high-income and upper-middle-income countries, including Albania, by developing and applying a sustainability framework scoring tool comprised of four key dimensions (environmental, economic, human health, and sociocultural and political). Their results show that human health is by far the most represented while the environmental, economic, and socio-cultural and political dimensions of sustainability are underrepresented in the dietary guidelines examined (Ahmed et al., 2019). Guiné et al. (2019) investigate the issues related to food choice and consumption patterns (e.g. health, economic, emotional, social, cultural and religious, marketing, environmental) in different countries (viz. Croatia, Egypt, Italy, Greece and Portugal) and conclude that "*in all five countries the motivations related to health as well as environment and politics were the more relevant to determine people's eating habits*" (p. 1126).

As for health-nutrition aspects, the scholarly literature deals with the association between the Mediterranean diet and obesity (Salcin et al., 2019; Willey et al., 2020); different non-communicable diseases (NCDs) such as diabetes (Willey et al., 2020), cardiovascular diseases (Papandreou & Tuomilehto, 2014; Sikic et al., 2017; Žeželj et al., 2018), cancers (Materljan et al., 2009), metabolic syndrome (Veček et al., 2020); as well as mental health and psychological well-being (Dragun et al., 2020; Salvatore et al., 2019). The results of the studies confirm that higher adherence to the Mediterranean diet is associated with reduced risk of diseases such as metabolic syndrome (Božina et al., 2018), cardiovascular diseases (Sikic et al., 2017), gastroesophageal reflux (Mone et al., 2016), subclinical atherosclerosis (Višković et al., 2013) and rheumatoid arthritis (Damjanović et al., 2009). For instance, Jovanović et al. (2020) found that the pro-inflammatory diet (i.e. inflammatory potential of the diet), which is significantly related to the metabolic syndrome, was statistically associated with lower adherence to a Mediterranean diet. Salvatore et al. (2019) point out that the Mediterranean diet compliance was associated with lesser mental distress in Dalmatia (Croatia). Buretić-Tomljanović et al. (2007) analyse the effects of environmental factors on body height and craniofacial variability in Croatia and conclude that "*Higher body height measures in both sexes were significantly correlated with Mediterranean diet type*" (p. 296).

The adherence to the Mediterranean diet was evaluated using various scores and metrics such as the Mediterranean Diet Adherence Screener (MEDAS) (García-Conesa et al., 2020; Quarta et al., 2021), the Mediterranean Diet Serving Score (MDSS) (Kolčić et al., 2016; Marendić et al., 2021; Salvatore et al., 2019; Veček et al., 2020), the Mediterranean Diet Quality Index (KIDMED) (Novak et al., 2017; Salcin et al., 2019) and the Mediterranean Adequacy Index (MAI) (Chang et al., 2017). In this respect, several studies point out the moderate to weak adherence to the Mediterranean diet (Havaš Auguštin et al., 2020; Kolčić et al., 2016; Quarta et

al., 2021). Kolčić et al. (2016) report that in a cross-sectional study encompassing 2768 Dalmatians from Korcula and Vis islands and Split city (Croatia) only 23% of the participants were classified as being adherent to the Mediterranean diet. Therefore, Quarta et al. (2021) suggest that "*the campaigns carried out to support and reinforce the MD and to promote plant-based foods have limited success across Southern Europe, and that more hard-hitting strategies are needed*". The low Mediterranean diet adherence is exemplified, among others, by low scoring for plant-based foods (Quarta et al., 2021).

More recently, some studies analysed the effects of the COVID-19 pandemic, and the related lockdown and confinement measures, on diets (Dragun et al., 2020; Sulejmani et al., 2021). For instance, Sulejmani et al. (2021) argue that female survey participants as well as those in family home residence or with professional educations reported a higher likelihood of turning into a higher adherence to the Mediterranean diet during the lockdown in Kosovo. Dragun et al. (2020) found an increased adherence to the Mediterranean diet pyramid for fruit, legumes, fish and sweets during the COVID-19 lockdown among adolescents and medical students in Split (Croatia).

CONCLUSIONS

The present article provides a comprehensive analysis of the scholarly literature on the Mediterranean diet and its sustainability (environmental, economic, sociocultural, and nutrition-health) in the Western Balkans. Most of the selected documents deal with Croatia, especially the island regions of the country. The selected documents focus on health-nutrition aspects while environmental, economic and socio-cultural issues are generally overlooked. As for health-nutrition aspects, the scholarly literature deals with the association between the Mediterranean diet and obesity, different NCDs (e.g. diabetes, cardiovascular diseases, cancers, metabolic syndrome) as well as mental health. The considered studies confirm that higher adherence to the Mediterranean diet is associated with reduced risk of diseases such as metabolic syndrome, cardiovascular diseases, gastroesophageal reflux, subclinical atherosclerosis and rheumatoid arthritis. However, the scholarly literature also highlights a decrease in adherence to the Mediterranean diet even in Mediterranean/Adriatic territories. Interestingly, some recent studies showed a shift towards the Mediterranean diet during the COVID-19 lockdown even among adolescents, which can represent a turning point towards more sustainable diets that are more aligned with the Mediterranean dietary model in the region. All in all, the analysis suggests that there is a need to adopt a holistic approach in studies on the Mediterranean diet in order to highlight its multiple and multifaceted benefits as well as synergies and trade-offs among them. The Mediterranean diet should be considered no more merely as a healthy diet but also as a sustainable diet with environmental, economic and socio-cultural benefits. This is crucial to better conceptualize and operationalise the contribution of the Mediterranean diet to the transformation of food systems and the achievement of the Sustainable Development Goals (SDGs) in the region.

REFERENCES

Aboussaleh, Y., Capone, R., & El Bilali, H. (2017). Mediterranean food consumption patterns: low environmental impacts and significant health–nutrition benefits. *Proceedings of the Nutrition Society*, *76*(04), 543–548. https://doi.org/10.1017/S0029665117001033

Aboussaleh, Y., El Bilali, H., Bottalico, F., Cardone, G., Ottomano Palmisano, G., & Capone, R. (2020). Mediterranean food and environmental impacts. In V. R. Preedy & R. R. Watson (Eds.), *The Mediterranean Diet: An Evidence-Based Approach* (pp. 103–110). Elsevier Inc.

Ahmed, S., Downs, S., & Fanzo, J. (2019). Advancing an Integrative Framework to Evaluate Sustainability in National Dietary Guidelines. *Frontiers in Sustainable Food Systems*, *3*, 1–20. https://doi.org/10.3389/fsufs.2019.00076

Belahsen, R., & Rguibi, M. (2006). Population health and Mediterranean diet in southern Mediterranean countries. *Public Health Nutrition*, *9*(8A), 1130–1135. https://doi.org/10.1017/S1368980007668517

Berry, E. M., Arnoni, Y., & Aviram, M. (2011). The Middle Eastern and biblical origins of the Mediterranean diet. *Public Health Nutrition*, *14*(12A), 2288–2295. https://doi.org/10.1017/S1368980011002539

Bosanac, V., Šanko, K., Gajdoš Kljusurić, J., & Colić Barić, I. (2016). Association between dietary offerings and nutritional status of adolescents as a factor of geographic region. *Journal of Food Composition and Analysis*, *53*, 13–21. https://doi.org/10.1016/j.jfca.2016.09.001

Božina, T., Lovrić, J., Šimičević, L., Merkler, A., Božina, M., Jelaković, B., & Sertić, J. (2018). Can the choice of diet undermine the potential genetic risk of AT1R 1166A>C gene polymorphism? *Gene*, *679*, 291–296. https://doi.org/10.1016/j.gene.2018.09.004

Buretić-Tomljanović, A., Giacometti, J., Ostojić, S., & Kapović, M. (2007). Sex-specific differences of craniofacial traits in Croatia: The impact of environment in a small geographic area. *Annals of Human Biology*, *34*(3), 296–314. https://doi.org/10.1080/03014460701211017

Burlingame, B., & Dernini, S. (2011). Sustainable diets: the Mediterranean diet as an example. *Public Health Nutrition*, *14*(12A), 2285–2287. https://doi.org/10.1017/S1368980011002527

Cena, H., Porri, D., De Giuseppe, R., Kalmpourtzidou, A., Salvatore, F. P., El Ghoch, M., Itani, L., Kreidieh, D., Brytek-Matera, A., Pocol, C. B., Arteta Arteta, D. S., Utan, G., & Kolčić, I. (2021). How Healthy Are Health-Related Behaviors in University Students: The HOLISTic Study. *Nutrients*, *13*(2), 675. https://doi.org/10.3390/nu13020675

Chang, T. F. M., Lepellere, M. A., Iseppi, L., & De Lorenzo, A. (2017). Food Styles and the Dynamics of the Mediterranean Adequacy Index. *New Medit*, *16*(3), 28–38.

da Silva, R., Bach-Faig, A., Raidó Quintana, B., Buckland, G., Vaz de Almeida, M. D., & Serra-Majem, L. (2009). Worldwide variation of adherence to the

Mediterranean diet, in 1961–1965 and 2000–2003. *Public Health Nutrition*, *12*(9A), 1676–1684. https://doi.org/10.1017/S1368980009990541

Damjanović, V., Vasilj, I., Vlak, T., & Zelenika, D. (2009). Prevalence and Risk Factors of the Rheumatoid Arthritis in Herzegovina Region in 2003-2005. *Collegium Antropologicum*, *33*, 73–77.

Deka, R., Narancic, N. S., Xi, H., Turek, S., Cubrilo-Turek, M., Vrhovski-Hebrang, D., Janicijevic, B., Tomljenovic, A., Szirovicza, L., Jin, L., Chakraborty, R., & Rudan, P. (2008). Metabolic syndrome in an island population of the eastern Adriatic coast of Croatia. *Collegium Antropologicum*, *32*(1), 85–91.

Dernini, S., Berry, E., Serra-Majem, L., La Vecchia, C., Capone, R., Medina, F., Aranceta-Bartrina, J., Belahsen, R., Burlingame, B., Calabrese, G., Corella, D., Donini, L., Lairon, D., Meybeck, A., Pekcan, A., Piscopo, S., Yngve, A., & Trichopoulou, A. (2017). Med Diet 4.0: the Mediterranean diet with four sustainable benefits. *Public Health Nutrition*, *20*(7), 1322–1330. https://doi.org/10.1017/S1368980016003177

Dernini, S., & Capone, R. (2021). A Change of Route in the Mediterranean, revitalising the 'Mediterranean Diet' towards more Sustainable Food Systems: A Cross-disciplinary Approach. In F. X. Medina & H. Macbeth (Eds.), *THE MEDITERRANEAN DIET from Health to Lifestyle and a Sustainable* (pp. 41–63). International Commission on the Anthropology of Food and Nutrition (ICAF).

Dragun, R., Veček, N. N., Marendić, M., Pribisalić, A., Đivić, G., Cena, H., Polašek, O., & Kolčić, I. (2020). Have Lifestyle Habits and Psychological Well-Being Changed among Adolescents and Medical Students Due to COVID-19 Lockdown in Croatia? *Nutrients*, *13*(1), 97. https://doi.org/10.3390/nu13010097

Dzono-Boban, A., Sogoric, S., & Vuletic, S. (2012). Regional Variations and Trends in Mortality from Cardiovascular Diseases in Population aged 0-64 in Dalmatia and Slavonia, 1998-2009. *Collegium Antropologicum*, *36*, 235–239.

Galli, A., Iha, K., Halle, M., El Bilali, H., Grunewald, N., Eaton, D., Capone, R., Debs, P., & Bottalico, F. (2017). Mediterranean countries' food consumption and sourcing patterns: An Ecological Footprint viewpoint. *Science of the Total Environment*, *578*, 383–391. https://doi.org/10.1016/j.scitotenv.2016.10.191

García-Conesa, M.-T., Philippou, E., Pafilas, C., Massaro, M., Quarta, S., Andrade, V., Jorge, R., Chervenkov, M., Ivanova, T., Dimitrova, D., Maksimova, V., Smilkov, K., Ackova, D. G., Miloseva, L., Ruskovska, T., Deligiannidou, G. E., Kontogiorgis, C. A., & Pinto, P. (2020). Exploring the Validity of the 14-Item Mediterranean Diet Adherence Screener (MEDAS): A Cross-National Study in Seven European Countries around the Mediterranean Region. *Nutrients*, *12*(10), 2960. https://doi.org/10.3390/nu12102960

Guiné, R., Ferrão, A. C., Ferreira, M., Correia, P., Cardoso, A. P., Duarte, J., Rumbak, I., Shehata, A.-M., Vittadini, E., & Papageorgiou, M. (2019). The motivations that define eating patterns in some Mediterranean countries. *Nutrition & Food Science*, *49*(6), 1126–1141. https://doi.org/10.1108/NFS-12-2018-0360

Havaš Auguštin, D., Šarac, J., Lovrić, M., Živković, J., Malev, O., Fuchs, N., Novokmet, N., Turkalj, M., & Missoni, S. (2020). Adherence to Mediterranean Diet and Maternal Lifestyle during Pregnancy: Island–Mainland Differentiation in the CRIBS Birth Cohort. *Nutrients*, *12*(8), 2179. https://doi.org/10.3390/nu12082179

Ivezić-Lalić, D., Marković, B. B., Kranjcević, K., Kern, J., Vrdoljak, D., & Vucak, J. (2013). Diversity of metabolic syndrome criteria in association with cardiovascular diseases - a family medicine-based investigation. *Medical Science Monitor*, *19*, 571–578.

Jovanović, G. K., Pavičić Žeželj, S., Klobučar Majanović, S., Mrakovcic-Sutic, I., & Šutić, I. (2020). Metabolic syndrome and its association with the Dietary Inflammatory Index (DII) ® in a Croatian working population. *Journal of Human Nutrition and Dietetics*, *33*(1), 128–137. https://doi.org/10.1111/jhn.12695

Kastorini, C. M., Milionis, H. J., Esposito, K., Giugliano, D., Goudevenos, J. A., & Panagiotakos, D. B. (2011). The effect of Mediterranean diet on metabolic syndrome and its components: A meta-analysis of 50 studies and 534,906 individuals. *Journal of the American College of Cardiology*, *57*(11), 1299–1313. https://doi.org/10.1016/j.jacc.2010.09.073

Keys, AB. (1970). Coronary heart disease in seven countries. *Circulation*, 51–52.

Keys, Ancel, Menott, A., Karvonen, M. J., Aravanjs, C., Blackburn, H., Buzina, R., Djordjevic, B. S., Dontas, A. S., Fidanza, F., Keys, M. H., Kromhout, D., Nedeljkovic, S., Punsar, S., Seccareccia, F., & Toshima, H. (2017). The diet and 15-year death rate in the seven countries study. *American Journal of Epidemiology*, *185*(11), 1130–1142. https://doi.org/10.1093/aje/kwx101

Kolcić, I., Biloglav, Z., Zgaga, L., Jovic, A. V., Curic, I., Curic, S., Susac, J., Velagic, V., Matec, L., Zobic, I., Zedelj, J., & Strnad, M. (2009). Prevalence of Increased Body Weight and Hypertension in the Population of Croatian Mainland and Adriatic Islands - Are Islanders Really Healthier? *Collegium Antropologicum*, *33*, 135–140.

Kolčić, I., Relja, A., Gelemanović, A., Miljković, A., Boban, K., Hayward, C., Rudan, I., & Polašek, O. (2016). Mediterranean diet in the southern Croatia – does it still exist? *Croatian Medical Journal*, *57*(5), 415–424. https://doi.org/10.3325/cmj.2016.57.415

Krešić, G., Dujmović, M., Mandić, M. L., & Delaš, I. (2013). Relationship between Mediterranean diet and breast milk fatty acid profile: a study in breastfeeding women in Croatia. *Dairy Science & Technology*, *93*(3), 287–301. https://doi.org/10.1007/s13594-013-0125-6

Lacirignola, C., & Capone, R. (2009). Mediterranean Diet: Territorial Identity and Food Safety. *New Medit*, *4*(8), 2–3.

León-Muñoz, L. M., Guallar-Castillón, P., Graciani, A., López-García, E., Mesas, A. E., Aguilera, M. T., Banegas, J. R., & Rodríguez-Artalejo, F. (2012). Adherence to the mediterranean diet pattern has declined in Spanish adults. *Journal of Nutrition*. https://doi.org/10.3945/jn.112.164616

Marendić, M., Polić, N., Matek, H., Oršulić, L., Polašek, O., & Kolčić, I. (2021). Mediterranean diet assessment challenges: Validation of the Croatian Version of the 14-item Mediterranean Diet Serving Score (MDSS) Questionnaire. *PLOS ONE*, *16*(3), e0247269. https://doi.org/10.1371/journal.pone.0247269

Materljan, E., Materljan, M., Materljan, B., Vlacic, H., Baricev-Novakovic, Z., & Sepcic, J. (2009). Multiple Sclerosis and Cancers in Croatia - A Possible Protective Role of the "Mediterranean diet." *Collegium Antropologicum*, *33*(2), 539–545.

Missoni, S. (2012). Nutritional Habits of Croatian Island Populations - Recent Insights. *Collegium Antropologicum*, *36*(4), 1139–1142.

Mone, I., Kraja, B., Bregu, A., Duraj, V., Sadiku, E., Hyska, J., & Burazeri, G. (2016). Adherence to a predominantly Mediterranean diet decreases the risk of gastroesophageal reflux disease: a cross-sectional study in a South Eastern European population. *Diseases of the Esophagus*, *29*(7), 794–800. https://doi.org/10.1111/dote.12384

Naja, F., Hwalla, N., Hachem, F., Abbas, N., Chokor, F. A. Z., Kharroubi, S., Chamieh, M.-C., Jomaa, L., & Nasreddine, L. (2021). Erosion of the Mediterranean diet among adolescents: evidence from an Eastern Mediterranean Country. *British Journal of Nutrition*, *125*(3), 346–356. https://doi.org/10.1017/S0007114520002731

Noah, A., & Truswell, S. (2003). Commodities consumed in Italy, Greece and other Mediterranean countries compared with Australia in 1960s and 1990s. *Asia Pacific Journal of Clinical Nutrition*, *12*(1), 23–29.

Novak, D., Štefan, L., Prosoli, R., Emeljanovas, A., Mieziene, B., Milanović, I., & Radisavljević-Janić, S. (2017). Mediterranean Diet and Its Correlates among Adolescents in Non-Mediterranean European Countries: A Population-Based Study. *Nutrients*, *9*(2), 177. https://doi.org/10.3390/nu9020177

Papandreou, C., & Tuomilehto, H. (2014). Coronary heart disease mortality in relation to dietary, lifestyle and biochemical risk factors in the countries of the Seven Countries Study: a secondary dataset analysis. *Journal of Human Nutrition and Dietetics*, *27*(2), 168–175. https://doi.org/10.1111/jhn.12187

Pucarin-Cvetković, J., Mustajbegovic, J., Jelinic, J. D., Senta, A., Nola, I. A., Ivankovic, D., Kaic-Rak, A., & Milosevic, M. (2006). Body mass index and nutrition as determinants of health and disease in population of Croatian Adriatic islands. *Croatian Medical Journal*, *47*(4), 619–626.

Quarta, S., Massaro, M., Chervenkov, M., Ivanova, T., Dimitrova, D., Jorge, R., Andrade, V., Philippou, E., Zisimou, C., Maksimova, V., Smilkov, K., Ackova, D. G., Miloseva, L., Ruskovska, T., Deligiannidou, G. E., Kontogiorgis, C. A., Sánchez-Meca, J., Pinto, P., & García-Conesa, M.-T. (2021). Persistent Moderate-to-Weak Mediterranean Diet Adherence and Low Scoring for Plant-Based Foods across Several Southern European Countries: Are We Overlooking the Mediterranean Diet Recommendations? *Nutrients*, *13*(5), 1432. https://doi.org/10.3390/nu13051432

Sadiku, E., Hasani, E., Këlliçi, I., Mone, I., Kraja, F., Kraja, B., & Burazeri, G. (2021). Extra-esophageal symptoms in individuals with and without erosive esophagitis: a case–control study in Albania. *BMC Gastroenterology*, *21*(1), 76. https://doi.org/10.1186/s12876-021-01658-z

Sahay, R. D., Couch, S. C., Missoni, S., Sujoldzic, A., Novokmet, N., Durakovic, Z., Rao, M. B., Milanovic, S. M., Vuletic, S., Deka, R., & Rudan, P. (2013). Dietary Patterns in Adults from an Adriatic Island of Croatia and their Associations with Metabolic Syndrome and its Components. *Collegium Antropologicum*, *37*(2), 335–342.

Salcin, L. O., Karin, Z., Miljanovic Damjanovic, V., Ostojic, M., Vrdoljak, A., Gilic, B., Sekulic, D., Lang-Morovic, M., Markic, J., & Sajber, D. (2019). Physical Activity, Body Mass, and Adherence to the Mediterranean Diet in Preschool Children: A Cross-Sectional Analysis in the Split-Dalmatia County (Croatia). *International Journal of Environmental Research and Public Health*, *16*(18), 3237. https://doi.org/10.3390/ijerph16183237

Salvatore, F. P., Relja, A., Filipčić, I. Š., Polašek, O., & Kolčić, I. (2019). Mediterranean diet and mental distress: "10,001 Dalmatians" study. *British Food Journal*, *121*(6), 1314–1326. https://doi.org/10.1108/BFJ-06-2018-0339

Serra-Majem, L., Roman, B., & Estruch, R. (2006). Scientific Evidence of Interventions Using the Mediterranean Diet: A Systematic Review. *Nutrition Reviews*, *64*, S27–S47. https://doi.org/10.1111/j.1753-4887.2006.tb00232.x

Sikic, J., Stipcevic, M., Vrazic, H., Cerkez Habek, J., Margetic, E., & Gulin, D. (2017). Nutrition in primary and secondary prevention of cardiovascular risk in the continental and Mediterranean regions of Croatia. *BMC Cardiovascular Disorders*, *17*(1), 247. https://doi.org/10.1186/s12872-017-0678-z

Sofi, F., Cesari, F., Abbate, R., Gensini, G. F., & Casini, A. (2008). Adherence to Mediterranean diet and health status: meta-analysis. *BMJ*, *337*(2), a1344. https://doi.org/10.1136/bmj.a1344

Štefan, L., Čule, M., Milinović, I., Juranko, D., & Sporiš, G. (2017). The Relationship between Lifestyle Factors and Body Composition in Young Adults. *International Journal of Environmental Research and Public Health*, *14*(8), 893. https://doi.org/10.3390/ijerph14080893

Sulejmani, E., Hyseni, A., Xhabiri, G., & Rodríguez-Pérez, C. (2021). Relationship in dietary habits variations during COVID-19 lockdown in Kosovo: The COVIDiet study. *Appetite*, *164*, 105244. https://doi.org/10.1016/j.appet.2021.105244

UNESCO. (2010). *The Mediterranean Diet*. http://www.unesco.org/archives/multimedia/document-1680-eng-2

Veček, N. N., Mucalo, L., Dragun, R., Miličević, T., Pribisalić, A., Patarčić, I., Hayward, C., Polašek, O., & Kolčić, I. (2020). The Association between Salt Taste Perception, Mediterranean Diet and Metabolic Syndrome: A Cross-Sectional Study. *Nutrients*, *12*(4), 1164. https://doi.org/10.3390/nu12041164

Višković, K., Rutherford, G. W., Sudario, G., Stemberger, L., Brnić, Z., & Begovac, J. (2013). Ultrasound measurements of carotid intima-media thickness

and plaque in HIV-infected patients on the Mediterranean diet. *Croatian Medical Journal*, *54*(4), 330–338. https://doi.org/10.3325/cmj.2013.54.330

Vrdoljak, D., Marković, B. B., Puljak, L., Lalić, D. I., Kranjčević, K., & Vučak, J. (2014). Lifestyle intervention in general practice for physical activity, smoking, alcohol consumption and diet in elderly: A randomized controlled trial. *Archives of Gerontology and Geriatrics*, *58*(1), 160–169. https://doi.org/10.1016/j.archger.2013.08.007

Willey, J., Wakefield, M., & Silver, H. J. (2020). Exploring the Diets of Adults with Obesity and Type II Diabetes from Nine Diverse Countries: Dietary Intakes, Patterns, and Quality. *Nutrients*, *12*(7), 2027. https://doi.org/10.3390/nu12072027

Žeželj, S. P., Kenđel Jovanović, G., Dragaš Zubalj, N., Mićović, V., & Sesar, Ž. (2018). Associations between Adherence to the Mediterranean Diet and Lifestyle Assessed with the MEDLIFE Index among the Working Population. *International Journal of Environmental Research and Public Health*, *15*(10), 2126. https://doi.org/10.3390/ijerph15102126

Žeželj, S. P., Kenđel Jovanović, G., & Krešić, G. (2019). The association between the Mediterranean diet and high physical activity among the working population in Croatia. *Medycyna Pracy*, *70*(2), 169–176. https://doi.org/10.13075/mp.5893.00773