

Exploring the Association Between Mediterranean Diet Adherence and Health-related Quality of Life: A Cross-sectional study in Active Older Adults

 Sara Alves^{1,2,3},  Samuel Encarnação^{1,2}, Carla Agradém²,  Ana Pereira^{1,2},  Miguel Monteiro^{1,2},  Olívia Pereira^{1,2},  Adília Fernandes^{1,2},  Helder Fernandes^{1,2}

1- Research Centre for Active Living and Wellbeing (LiveWell)

2- Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

3- Universitat Jaume I, Castelló de la Plana, Valencia, Spain

Corresponding author: helder@ipb.pt

Informação do artigo

Recebido: 31/03/2025

Revisto: 21/05/2025

Aceite: 30/06/2025



This work is licensed under [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International](https://creativecommons.org/licenses/by-nc-nd/4.0/)

ABSTRACT

Introduction: The Mediterranean diet is associated with lower mortality rates and reduced heart disease and cancer risks. As populations age, the importance of health-related quality of life is growing. Research on dietary patterns and quality of life in older adults is limited, but higher diet quality is linked to better well-being. **Objective:** This study investigates whether adherence to the Mediterranean diet is associated with health-related quality of life in adults aged 60 and older, focusing on medication use, comorbidities, and other factors.

Methodology: A cross-sectional study was employed. Self-administered questionnaires were used to collect data from participants. Health-related quality of life was assessed using the MOS SF-36, while diet adherence was evaluated through PREDIMED instrument. Statistical analyses were conducted using SPSS with a 95% confidence interval and significance at $p < 0.05$. **Results:** Thirty participants were involved; 20 showed low/moderate adherence and ten with high diet adherence. Interestingly, the results showed no statistically significant differences among the three adherence groups for most dimensions, apart from the Role-Emotional dimension ($p=0.039$). However, a significant association was identified between adherence to the Mediterranean diet and medication use ($p < 0.001$), as well as between adherence levels and the presence of comorbidities ($p < 0.001$). **Conclusion:** While this study did not find a clear link between adherence to the Mediterranean diet and health-related quality of life, these findings underscore the need for further research with larger sample sizes to

understand these relationships better. Dietary interventions and lifestyle modifications remain critical for promoting healthy aging and improving overall quality of life among older adults.

Keywords: SF-36; Mediterranean diet; Healthy aging; Longevity

INTRODUCTION

The significant advancements in medicine, public health, science, and technology have contributed to seniors today enjoying longer lifespans compared to previous generations (Jivraj et al., 2020). As a result, ensuring good health in older age has emerged as a critical public health challenge (Olshansky, 2018). Among the well-established factors influencing health, lifestyle plays a pivotal role. Consequently, promoting a healthy lifestyle has become a cornerstone strategy for fostering healthy aging. Within this context, diet stands out as one of the most modifiable aspects of lifestyle (Yeung et al., 2021). Encouraging the adoption of a nutritious diet is not only cost-effective but also an impactful approach to improving health outcomes, particularly in supporting healthy aging (Critselis & Panagiotakos, 2020). Although the ideal diet for healthy aging has not been definitively identified, evidence strongly suggests that adherence to the Mediterranean diet (MD) is associated with significant improvements in both mental and physical well-being (Ruano-Rodr guez et al., 2015). This dietary pattern is characterized by a high intake of plant-based foods such as vegetables, fruits, nuts, and whole grains, alongside fish and healthy fats primarily derived from olive oil.

Simultaneously, it emphasizes reduced consumption of meats and saturated fats while permitting moderate alcohol intake (Schwingshackl et al., 2019; Tanaka et al., 2021). While the precise mechanisms through which the MD reduces the risk of cardiovascular disease, certain cancers, and other metabolic conditions remain incompletely understood, its benefits are largely attributed to bioactive compounds that act through interconnected pathways (Schwingshackl et al., 2020). Key contributors include dietary fibre, which lowers LDL cholesterol by reducing absorption and enhancing excretion, as well as improving insulin sensitivity (Mart nez-Gonz lez et al., 2008; Salas-Salvad o et al., 2008, 2011). Additionally, polyphenols boost antioxidative capacity, neutralize free radicals, and mitigate inflammation (Fit o et al., 2007; Mattei et al., 2018; Sk ldstam et al., 2003). Collectively, these nutrients work to lower health risk factors and promote overall well-being (Schwingshackl et al., 2020). Beyond these physiological benefits, adherence to the MD has also been linked to better physical health and improved health-related quality of life (HRQoL) (Galilea-Zabalza et al., 2018). This enhancement is achieved by fostering better general health, preventing diseases caused by nutritional deficiencies, and mitigating or preventing secondary malnutrition that may arise from or be associated with other health conditions (Amarantos et al., 2001). Health-related quality of life (HRQoL) is a multifaceted concept encompassing physical, mental, emotional, and social well-being. Unlike traditional measures such as population health metrics, life expectancy, or mortality rates, HRQoL emphasizes how an individual's

health status influences their overall quality of life (Galilea-Zabalza et al., 2018).

As the global population ages, understanding the relationship between diet and outcomes like HRQoL becomes increasingly important (Amarantos et al., 2001). The growing recognition that quality of life (QoL) and functional ability must accompany increased life expectancy has spurred interest in promoting 'successful aging' (Bowling & Dieppe, 2005).

Despite some research in the area, there remains a significant gap in our understanding of how overall dietary patterns influence HRQoL in adults. Therefore, this cross-sectional study aims to evaluate the relationship between adherence to the Mediterranean diet and HRQoL among older adults. This study also focuses on the impact of medication use, comorbidities on this relationship.

METHODS

Study Design and Participants

This study employs a cross-sectional design to investigate the association between adherence to the Mediterranean diet and health-related quality of life among older adults. Additionally, the research examines the relationship between medication use and the presence of comorbidities within this population. Participants were older adults aged 60 and above, recruited from a multicomponent exercise training program tailored to this demographic, who agreed to participate. Participants were fully informed about the study's objectives, procedures, potential benefits, and associated risks. They received comprehensive explanations regarding the confidentiality and protection of their data, as well as their

right to withdraw from the study without any penalties. Informed consent was obtained from each participant before data collection, ensuring voluntary participation. Stringent adherence to the Declaration of Helsinki Oviedo Convention was ensured throughout the research process (approved protocol by Ethical Council of Universidade Local de Saúde do Nordeste, Nº41/2024).

Data Collection and Analysis

Data was collected using a series of validated, self-administered questionnaires to comprehensively assess sociodemographic characteristics, health-related quality of life, and dietary adherence. Participants began by completing a sociodemographic questionnaire that gathered information on age, sex, education level, marital status and health factors, such as diagnosed chronic diseases, medication consumption and associated comorbidities. Health-related quality of life was assessed using the Portuguese version of the Medical Outcomes Study 36-Item Short-Form Health Survey (MOS SF-36) (Ferreira, 2000). This widely validated instrument evaluates eight domains: physical functioning, role limitations due to physical health, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health. Scores for each domain range from 0 to 100, with higher values indicating better quality of life (Ware et al., 1992).

Dietary adherence (DA) was evaluated using the PREDIMED (Prevención con Dieta Mediterránea) questionnaire, a validated tool designed to assess adherence to the Mediterranean diet. This instrument

consists of 14 items, each corresponding to specific dietary habits, with a scoring system that categorizes individuals based on their level of adherence (Afonso et al., 2014; Estruch et al., 2018). Each item is assigned a score of 1 point if the participant's response aligns with the criteria outlined in the questionnaire. The total adherence score is obtained by summing all points, allowing for the classification of adherence to the Mediterranean diet into three categories: high adherence (11–14 points), moderate adherence (7–10 points), and low adherence (0–6 points) (Estruch et al., 2018). According to established cut-off thresholds, participants were classified into these categories to facilitate the interpretation of dietary patterns and their potential associations with health outcomes.

Data collection followed standardized procedures to ensure consistency and reliability. Participants were provided with detailed instructions before completing the questionnaires, and trained researchers were available to clarify any doubts. Responses were checked for completeness and missing or inconsistent data were addressed according to predefined criteria.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics (version 27.0). Descriptive statistics (mean \pm standard deviation (SD)) were used to summarize continuous variables, while categorical variables were presented as frequencies and percentages. The normality of data distribution was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Given the small sample size, the assumption of normality was not met for several variables,

limiting the use of parametric statistical tests. Therefore, non-parametric tests were applied to ensure the robustness of the analyses (Da Cunha et al., 2015). Specifically, Differences in HRQoL scores among the MD adherence categories was evaluated using the Kruskal-Wallis test. Correlations between continuous variables were assessed using Spearman's rank correlation coefficient, which is more appropriate for non-normally distributed data.

A confidence interval of 95% was applied, and statistical significance was set at $p < 0.05$.

RESULTS

Population Characterization

A total of 30 individuals participated in the study. Most of the participants were female (83.3%), while only 16.7% were male. The participants had a mean age of 71 years. In terms of marital status, more than half were married (53.3%), with 23.3% being widowed, 13.3% divorced, 6.7% single, and 3.3% in common-law

Regarding household composition, 43.3% of participants lived alone, while 56.7% lived with one to three other people. In terms of health-related factors, 44.8% reported having at least one diagnosed chronic condition, while an equal percentage reported not having any chronic conditions. Additionally, 10.3% were unsure of their health status.

Medication use was common, with 90% of participants taking medication regularly. Concerning comorbidities, 16.7% reported having no associated conditions, 40% had one chronic disease, and 43.3% had two or more comorbidities. Table 1 provides a

summary of the characteristics of the sample.

Mediterranean Diet Adherence

Regarding the analysis of Mediterranean Diet Adherence, resumed in Table 1, the study sample was categorized into three groups based on their adherence to the Mediterranean diet: low adherence (n=4), moderate adherence (n=16), and high adherence (n=10). The sample is unevenly distributed, with most participants exhibiting moderate adherence to the Mediterranean diet. The standard deviations suggest less variability in adherence scores within the High adherence group compared to the Low and Moderate groups. This is expected.

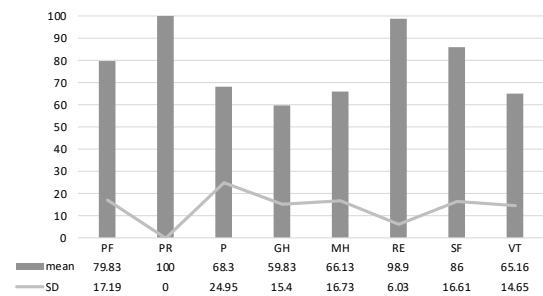
Table 1-Sample Adherence to MD

Classification	%	Mean ±SD
Low Adherence	12.1%	5.00±1.41
Medium Adherence	48.5%	8.75±1.00
High Adherence	30.3%	11.80±0.63

Health-Related Quality of Life

Health-related quality of life was evaluated using the eight dimensions of the SF-36 questionnaire. Figure 1 illustrates the mean scores for each dimension, providing a comprehensive overview of the participants' self-reported HRQoL.

Figure 1- Sample HRQoL



HRQoL values in Y-axis, ranging from 0 to 100 and in X-axis, mean and SD for HRQoL domains, representing P – Physical Functioning, PR – Physical Role limitations, P – Pain, GH – General Health, MH – Mental Health, RE – Role Emotional, SF – Social functioning and VT for Vitality.

Participants reported varying levels of self-assessed HRQoL across multiple domains (see Figure 1). In terms of physical functioning, the average score was 79.83 (SD = 17.19). Role limitations due to health issues were notably high, with a mean score of 100 (SD = 0). For pain, participants reported an average score of 68.3 (SD = 24.95).

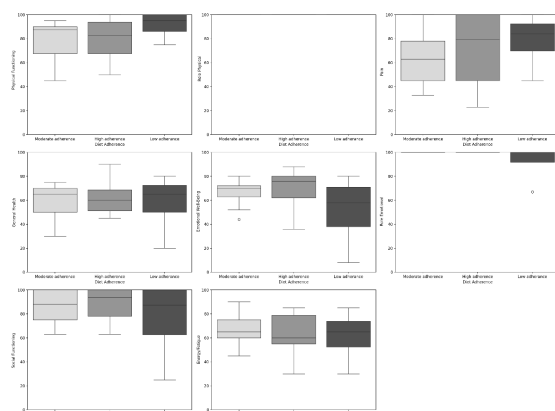
Participants rated their general health as moderately positive, with an average score of 59.83 (SD = 15.4). Emotional well-being had an average score of 66.13 (SD = 16.73). In terms of role limitations due to emotional factors, the mean score was 98.90 (SD = 6.03). Social functioning scored an average of 86.00 (SD = 16.61), while the mean score for vitality was 65.16 (SD = 14.65).

The association between adherence to the Mediterranean diet and health-related quality of life

The Mediterranean diet has been associated with various health benefits, and understanding its impact on health-related quality of life is essential for evaluating its overall effectiveness. This analysis

investigates the interrelationships among physical functioning, pain levels, general health, emotional well-being, and social functioning across varying levels of adherence. These relationships are delineated in Figure 2, providing a comprehensive visual representation of the data.

Figure 2-Boxplot for representing Mean differences in the health-related quality of life with Diet adherence.



HRQoL values in Y-axis, ranging from 0 to 100 and MD in X-axis, representing “Low Adherence”, “Moderate Adherence” and c“High Adherence”.

The Kruskal-Wallis test was used to compare these dimensions across the three adherence groups. Interestingly, the results showed no statistically significant differences among the three adherence groups for most dimensions, apart from the Role-Emotional dimension ($p=0.039$). This suggests that adherence to the Mediterranean diet may particularly impact emotional role functioning, while other aspects of health-related quality of life remain relatively unaffected.

For the Physical Functioning dimension, although not statistically significant ($p=0.237$), the low adherence group showed the highest mean score (91.25), followed by the high adherence group (80.00), and the moderate adherence

group (77.19). This unexpected pattern warrants further investigation in larger studies.

The Role-Physical dimension showed no variation across groups, with all participants scoring 100, indicating no limitations in this area. For the Pain dimension, while not statistically significant ($p=0.502$), the low adherence group reported the least pain (mean=78.25), followed by the high adherence group (68.44), and the moderate adherence group (63.81).

General Health scores were similar across groups ($p=0.969$), with the high adherence group showing a slightly higher mean (61.67) compared to the moderate (59.06) and low (57.50) adherence groups. Emotional Well-being, though not statistically significant ($p=0.327$), showed a trend of increasing scores with higher adherence to the Mediterranean diet (low: 51.00, moderate: 67.25, high: 69.33).

The Role-Emotional dimension was the only one showing a statistically significant difference ($p=0.039$), with both moderate and high adherence groups scoring 100, while the low adherence group had a mean of 91.75. This suggests that better adherence to the Mediterranean diet might be associated with fewer limitations due to emotional problems.

Social Function and Energy/Fatigue dimensions showed no significant differences across groups ($p=0.824$ and $p=0.826$, respectively). However, there was a slight trend towards better social functioning with higher adherence to the Mediterranean diet.

The study also used chi-square tests to investigate associations between Mediterranean diet adherence and various

demographic and health variables. No significant associations were found between adherence levels and sex, marital status, living situation, or presence of chronic disease. However, a significant association was observed between adherence to the Mediterranean diet and medication use ($p < 0.001$). Additionally, there was a significant association between adherence levels and comorbidities ($p = 0.015$).

DISCUSSION

The present study investigated the relationship between adherence to the Mediterranean diet and Health-related quality of life among older adults. The results indicated a lack of statistically significant differences across most HRQoL dimensions. However, it is important to recognize that this does not necessarily imply the absence of associations. Previous research has consistently demonstrated a positive link between strong adherence to the MD and improved HRQoL scores. For example, studies focusing on younger populations (Costarelli et al., 2013; Victoria-Montesinos et al., 2023), as well as adults (Godos et al., 2025; López-Olivares et al., 2023; Mantzorou et al., 2023) highlight these benefits. However, a prospective study in Spain involving older adults found only a small statistically significant association between MD adherence and improved HRQoL after several years, a result that fell short of clinical relevance. This suggests that the long-term effects of the MD on HRQoL may be influenced by sample-specific factors, such as age or baseline health status (Pérez-Tasigchana et al., 2016). Regional differences also play a role in these outcomes. A large cross-sectional study in

North America—a region where MD adherence is traditionally low—found that individuals with greater adherence to this dietary pattern reported significantly better quality of life, along with reduced pain, disability, and depressive symptoms (Veronese et al., 2016). These findings suggest that the impact of the MD on HRQoL may vary based on baseline dietary habits. In regions where Mediterranean dietary practices are deeply ingrained, the observed improvements may be modest, as these habits are already part of daily life. Conversely, in areas where less nutritious diets are prevalent, adopting the MD may yield more substantial benefits due to the significant dietary shift toward nutrient-rich foods (Fond et al., 2020).

Interestingly, our study did identify a statistically significant difference in the Role-Emotional dimension ($p=0.039$) among adherence groups. This finding aligns with a similar cross-sectional study in Spain that reported a direct association between MD adherence and mental as well as physical domains of HRQoL (Zaragoza-Martí et al., 2018). The MD's mental health benefits are well-documented, including enhanced cognitive abilities, increased brain thickness, and a reduced likelihood of cognitive impairment (Martínez-Lapiscina et al., 2013; Valls-Pedret et al., 2015). Additionally, adherence to the MD has been associated with a lower risk of depression, likely due to its high content of monounsaturated fatty acids from olive oil and its sustained emphasis on fish, vegetables, and grains (Bountziouka et al., 2009; Carlos et al., 2018; Quirk et al., 2013).

Regarding sex, our results showed no statistically significant variations in HRQoL

perceptions based on MD adherence. However, other studies have highlighted gender-specific trends. For example, a Greek study involving older adults, female participants demonstrated a 36% higher likelihood of adhering to the MD than their male counterparts. Furthermore, in the same study, individuals with moderate or high MD adherence exhibited more than twice the levels of HRQoL compared to those with low adherence (Manzorou et al., 2023). While our findings do not establish direct associations between these variables, this leads to the hypothesis that higher HRQoL scores in women may be partly due to their greater adherence to this dietary pattern. Social and cultural factors may also influence these outcomes. For example, married individuals or those not living alone often benefit from greater social support, which can facilitate healthier dietary patterns (Apostolaki et al., 2021). However, our results align with other cohort studies that found no significant differences in MD adherence based on marital status (Zaragoza-Mart  et al., 2018). The MD is not merely a dietary pattern but also a reflection of cultural and social traditions. In Mediterranean societies, meals are often social events that strengthen interpersonal connections and preserve cultural identity across generations. Shared meal preparation and family support play critical roles in fostering adherence to the MD. In contrast, in non-Mediterranean regions, adopting this dietary pattern often represents a significant lifestyle change that can lead to pronounced health benefits (Brehm et al., 2021; Maykish et al., 2021).

Our findings also align with existing literature on chronic diseases and dietary patterns. The MD is widely recognized for its ability to reduce oxidative stress and chronic inflammation—key contributors to chronic disease development—due to its bioactive antioxidant components (H bert et al., 2019). For instance, an Australian cohort study found that individuals adhering closely to the MD and maintaining a lower Dietary Inflammatory Index (DII) experienced lower mortality rates from cardiovascular and coronary heart diseases (Hodge et al., 2018). However, our study revealed a significant association between MD adherence and medication use. This finding should be interpreted cautiously, as it may reflect sample-specific characteristics rather than a true causal relationship. Factors such as pre-existing health conditions or access to healthcare services could have influenced this outcome. Future research is needed to determine whether MD adherence independently affects medication use or if other variables mediate this relationship.

It is important to recognize that the MD is not defined by a single nutrient or food group but rather by a combination of biologically active foods that make this dietary model unique (Schwingshackl et al., 2020). The right balance of healthy fats, complex carbohydrates, proteins, fiber, vitamins, minerals, and a variety of bioactive compounds contributes to numerous health benefits. These components likely work together through various biological and molecular mechanisms to reduce the risk of non-communicable diseases (NCDs), ultimately impacting morbidity and mortality (Dominguez et al., 2021).

The present study has some limitations, including a small sample size and potential confounding variables that limit the findings. Reliance on self-reported data for diet adherence and HRQoL introduces biases, and unequal group sizes may affect statistical robustness. Therefore, causality cannot be established.

Future research should focus on larger, more representative samples to improve statistical power. A longitudinal design would help examine the relationship between diet adherence and HRQoL over time. Incorporating qualitative data, like interviews, could provide deeper insights into the experiences of those following the Mediterranean diet. Finally, investigating the types of medications participants take may clarify the interaction between diet and medication use.

CONCLUSION

While our study did not uncover statistically significant differences in most dimensions of health-related quality of life (HRQoL), it nevertheless adds valuable insights to the growing literature on the intricate relationship between adherence to the Mediterranean Diet (MD) and longevity, as well as healthy aging.

The findings suggest that factors such as cultural practices, regional dietary habits, and individual lifestyle choices may play a significant role in mediating the impact of this dietary pattern on health outcomes as individuals age.

Further longitudinal studies focused on longevity and healthy aging are essential. Such research could provide deeper insights into the long-term health implications of the Mediterranean Diet and how it

may promote not only overall well-being but also enhance the quality of life in older adults. Understanding these dynamics can inform public health initiatives aimed at encouraging dietary patterns that support healthy aging, ultimately contributing to better health outcomes in diverse populations as they navigate the aging process.

FUNDING

This work was co-financed by the European Regional Development Fund (FEDER) through the programme INTERREG VI-A Spain—Portugal (POCTEP) 2021–2027: Novas Sociedades Longevas (0137_NSL_6_E).

REFERENCES

- Afonso, L., Moreira, T., & Oliveira, A. (2014). Índices de adesão ao padrão alimentar mediterrânico - a base metodológica para estudar a sua relação com a saúde. *Revista Factores de Risco, Jan-Mar*(31), 48–55.
- Amarantos, E., Martinez, A., & Dwyer, J. (2001). Nutrition and quality of life in older adults. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences, 56 Spec No 2*, 54–64. https://doi.org/10.1093/GERONA/56.SUPPL_2.54
- Apostolaki, I., Pepa, A., Vlassopoulos, A., & Kapsokefalou, M. (2021). Social capital and self-perceived quality of life-interrelated predictors of mediterranean diet adherence in older adults. *Nutrients, 13*(9), 3100. <https://doi.org/10.3390/NU13093100/S1>
- Bountziouka, V., Polychronopoulos, E., Zeimbekis, A., Papavenetiou, E., Ladoukaki, E., Papairakleous, N., Gotsis, E., Metallinos,

G., Lionis, C., & Panagiotakos, D. (2009). Long-term fish intake is associated with less severe depressive symptoms among elderly men and women: the MEDIS (Mediterranean ISlands Elderly) epidemiological study. *Journal of Aging and Health*, 21(6), 864–880. <https://doi.org/10.1177/0898264309340693>

Bowling, A., & Dieppe, P. (2005). What is successful ageing and who should define it? *BMJ*, 331(7531), 1548–1551. <https://doi.org/10.1136/BMJ.331.7531.1548>

Brehm, B. A., DeFrank, S., & Swartz, R. (2021). Mediterranean Diet. *Encyclopedia 2021, Vol. 1, Pages 371-387*, 1(2), 371–387. <https://doi.org/10.3390/ENCYCLOPEDIA1020031>

Carlos, S., De La Fuente-Arrillaga, C., Bes-Rastrollo, M., Razquin, C., Rico-Campà, A., Martínez-González, M. A., & Ruiz-Canela, M. (2018). Mediterranean Diet and Health Outcomes in the SUN Cohort. *Nutrients*, 10(4), 439. <https://doi.org/10.3390/NU10040439>

Costarelli, V., Koretsi, E., & Georgitsoyianni, E. (2013). Health-related quality of life of Greek adolescents: The role of the Mediterranean diet. *Quality of Life Research*, 22(5), 951–956. <https://doi.org/10.1007/S11136-012-0219-2/TABLES/3>

Critselis, E., & Panagiotakos, D. (2020). Adherence to the Mediterranean diet and healthy ageing: Current evidence, biological pathways, and future directions. *Critical Reviews in Food Science and Nutrition*, 60(13), 2148–2157. <https://doi.org/10.1080/10408398.2019.1631752>

Da Cunha, D., Ramires, N., Tibana, A., Ferreira De Melo, G., & Prestes, J. (2015). TESTES DE NORMALIDADE EM ANÁLISES ESTATÍSTICAS: UMA ORIENTAÇÃO PARA PRATICANTES EM CIÊNCIAS DA SAÚDE E ATIVIDADE FÍSICA. *Revista Mackenzie de Educação Física e Esporte*, 14(2), 73–77. <https://editorarevistas.mackenzie.br/index.php/remef/article/view/6583>

Dominguez, L. J., Di Bella, G., Veronese, N., & Barbagallo, M. (2021). Impact of Mediterranean Diet on Chronic Non-Communicable Diseases and Longevity. *Nutrients*, 13(6), 2028. <https://doi.org/10.3390/NU13062028>

Estruch, R., Ros, E., Salas-Salvadó, J., Covas, M.-I., Corella, D., Arós, F., Gómez-García, E., Ruiz-Gutiérrez, V., Fiol, M., Lapetra, J., Lamuela-Raventós, R. M., Serra-Majem, L., Pintó, X., Basora, J., Muñoz, M. A., Sorlí, J. V., Martínez, J. A., Fitó, M., Gea, A., ... Martínez-González, M. A. (2018). Primary Prevention of Cardiovascular Disease with a Mediterranean Diet Supplemented with Extra-Virgin Olive Oil or Nuts. *New England Journal of Medicine*, 378(25). https://doi.org/10.1056/NEJMOA1800389/SUPPL_FILE/NEJMOA1800389_DISCLOSURES.PDF

Ferreira, P. L. (2000). Criação da Versão Portuguesa do MOS SF-36 Parte I - Adaptação Cultural e Linguística. *Acta Medica Portuguesa*, 13, 55–66. <https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/1760/1337>

Fitó, M., Guxens, M., Corella, D., Sáez, G., Estruch, R., De La Torre, R., Francés, F., Cabezas, C., López-Sabater, M. D. C., Murrugut, J., García-Arellano, A., Arós, F., Ruiz-Gutiérrez, V., Ros, E., Salas-Salvadó, J., Fiol, M., Solá, R., & Covas, M. I. (2007). Effect of

a traditional Mediterranean diet on lipoprotein oxidation: a randomized controlled trial. *Archives of Internal Medicine*, 167(11), 1195–1203. <https://doi.org/10.1001/ARCHINTE.167.11.1195>

Fond, G., Young, A. H., Godin, O., Messiaen, M., Lançon, C., Auquier, P., & Boyer, L. (2020). Improving diet for psychiatric patients: High potential benefits and evidence for safety. *Journal of Affective Disorders*, 265, 567–569. <https://doi.org/10.1016/J.JAD.2019.11.092>

Galilea-Zabalza, I., Buil-Cosiales, P., Salas-Salvadó, J., Toledo, E., Ortega-Azorín, C., Díez-Espino, J., Vázquez-Ruiz, Z., Zomeño, M. D., Vioque, J., Martínez, J. A., Romaguera, D., Perez-Farinos, N., López-Miranda, J., Estruch, R., Bueno-Cavanillas, A., Arós, F., Tur, J. A., Tinahones, F., Serra-Majem, L., ... Muñoz Bravo, C. (2018). Mediterranean diet and quality of life: Baseline cross-sectional analysis of the PREDIMED-PLUS trial. *PLOS ONE*, 13(6), e0198974. <https://doi.org/10.1371/JOURNAL.PONE.0198974>

Godos, J., Guglielmetti, M., Ferraris, C., Frias-Toral, E., Domínguez Azpíroz, I., Lipari, V., Di Mauro, A., Furnari, F., Castellano, S., Galvano, F., Iacoviello, L., Bonaccio, M., & Grosso, G. (2025). Mediterranean Diet and Quality of Life in Adults: A Systematic Review. *Nutrients*, 17(3), 577. <https://doi.org/10.3390/NU17030577/S1>

Hébert, J. R., Shivappa, N., Wirth, M. D., Hussey, J. R., & Hurley, T. G. (2019). Perspective: The Dietary Inflammatory Index (DII)—Lessons Learned, Improvements Made, and Future Directions. *Advances in Nutrition*, 10(2), 185.

<https://doi.org/10.1093/ADVANCES/NMY071>

Hodge, A. M., Bassett, J. K., Dugué, P. A., Shivappa, N., Hébert, J. R., Milne, R. L., English, D. R., & Giles, G. G. (2018). Dietary inflammatory index or Mediterranean diet score as risk factors for total and cardiovascular mortality. *Nutrition, Metabolism, and Cardiovascular Diseases: NMCD*, 28(5), 461–469. <https://doi.org/10.1016/J.NUMECD.2018.01.010>

Jivraj, S., Goodman, A., Pongiglione, B., & Ploubidis, G. B. (2020). Living longer but not necessarily healthier: The joint progress of health and mortality in the working-age population of England. *Population Studies*, 399–414. <https://doi.org/10.1080/00324728.2020.1767297>

López-Olivares, M., Fernández-Gómez, E., Mohatar-Barba, M., Luque-Vara, T., Nestares, T., López-Bueno, M., & Enrique-Mirón, C. (2023). Adherence to the Mediterranean Diet Is Associated with Health-Related Quality of Life and Anthropometric Measurements in University Professors. *Healthcare* 2023, Vol. 11, Page 1928, 11(13), 1928. <https://doi.org/10.3390/HEALTHCARE11131928>

Mantzorou, M., Mentzelou, M., Vasios, G. K., Kontogiorgis, C., Antasouras, G., Vadikolias, K., Psara, E., Vorvolakos, T., Poulivos, E., Serdari, A., Papadopoulou, S. K., & Giaginis, C. (2023). Mediterranean Diet Adherence Is Associated with Favorable Health-Related Quality of Life, Physical Activity, and Sleep Quality in a Community-Dwelling Greek Older Population. *Antioxidants* 2023, Vol. 12, Page 983, 12(5), 983. <https://doi.org/10.3390/ANTIOX12050983>

Martínez-González, M. Á., De La Fuente-Arrillaga, C., Nunez-Cordoba, J. M., Basterra-Gortari, F. J., Beunza, J. J., Vazquez, Z., Benito, S., Tortosa, A., & Bes-Rastrollo, M. (2008). Adherence to Mediterranean diet and risk of developing diabetes: prospective cohort study. *BMJ (Clinical Research Ed.)*, *336*(7657), 1348–1351. <https://doi.org/10.1136/BMJ.39561.501007.BE>

Martínez-Lapiscina, E. H., Clavero, P., Toledo, E., Estruch, R., Salas-Salvadó, J., San Julián, B., Sanchez-Tainta, A., Ros, E., Valls-Pedret, C., & Martínez-González, M. Á. (2013). Mediterranean diet improves cognition: the PREDIMED-NAVARRA randomised trial. *Journal of Neurology, Neurosurgery, and Psychiatry*, *84*(12), 1318–1325. <https://doi.org/10.1136/JNNP-2012-304792>

Mattei, J., Sotres-Alvarez, D., Gellman, M., Castañeda, S. F., Hu, F. B., Tucker, K. L., Siega-Riz, A. M., & Kaplan, R. C. (2018). Diet quality, inflammation, and the ankle brachial index in adults with or without cardiometabolic conditions. *Clinical Nutrition (Edinburgh, Scotland)*, *37*(4), 1332–1339. <https://doi.org/10.1016/j.clnu.2017.06.003>

Maykish, A., Rex, R., & Sikalidis, A. K. (2021). Organic Winemaking and Its Subsets; Biodynamic, Natural, and Clean Wine in California. *Foods 2021, Vol. 10, Page 127*, *10*(1), 127. <https://doi.org/10.3390/FOODS10010127>

Olshansky, S. J. (2018). From Lifespan to Healthspan. *JAMA*, *320*(13), 1323–1324. <https://doi.org/10.1001/JAMA.2018.12621>

Pérez-Tasigchana, R. F., León-Muñoz, L. M., López-García, E., Banegas, J. R.,

Rodríguez-Artalejo, F., & Guallar-Castillón, P. (2016). Mediterranean Diet and Health-Related Quality of Life in Two Cohorts of Community-Dwelling Older Adults. *PLOS ONE*, *11*(3), e0151596. <https://doi.org/10.1371/JOURNAL.PONE.0151596>

Quirk, S. E., Williams, L. J., O'Neil, A., Pasco, J. A., Jacka, F. N., Housden, S., Berk, M., & Brennan, S. L. (2013). The association between diet quality, dietary patterns and depression in adults: a systematic review. *BMC Psychiatry*, *13*. <https://doi.org/10.1186/1471-244X-13-175>

Ruano-Rodríguez, C., Serra-Majem, L., & Dubois, D. (2015). Assessing the impact of dietary habits on health-related quality of life requires contextual measurement tools. *Frontiers in Pharmacology*, *6*(MAY). <https://doi.org/10.3389/fphar.2015.00101>

Salas-Salvadó, J., Bulló, M., Babio, N., Martínez-González, M. Á., Ibarrola-Jurado, N., Basora, J., Estruch, R., Covas, M. I., Corella, D., Arós, F., Ruiz-Gutiérrez, V., & Ros, E. (2011). Reduction in the incidence of type 2 diabetes with the Mediterranean diet: results of the PREDIMED-Reus nutrition intervention randomized trial. *Diabetes Care*, *34*(1), 14–19. <https://doi.org/10.2337/DC10-1288>

Salas-Salvadó, J., Fernández-Ballart, J., Ros, E., Martínez-González, M. A., Fitó, M., Estruch, R., Corella, D., Fiol, M., Gómez-Gracia, E., Arós, F., Flores, G., Lapetra, J., Lamuela-Raventós, R., Ruiz-Gutiérrez, V., Bulló, M., Basora, J., & Covas, M. I. (2008). Effect of a Mediterranean diet supplemented with nuts on metabolic syndrome status: one-year results of the PREDIMED

randomized trial. *Archives of Internal Medicine*, 168(22), 2449–2458. <https://doi.org/10.1001/ARCHINTE.168.22.2449>

Schwingshackl, L., Morze, J., & Hoffmann, G. (2019). Mediterranean diet and health status: Active ingredients and pharmacological mechanisms. *British Journal of Pharmacology*, 177(6), 1241. <https://doi.org/10.1111/BPH.14778>

Schwingshackl, L., Morze, J., & Hoffmann, G. (2020). Mediterranean diet and health status: Active ingredients and pharmacological mechanisms. *British Journal of Pharmacology*, 177(6), 1241–1257. <https://doi.org/10.1111/BPH.14778>

Sköldstam, L., Hagfors, L., & Johansson, G. (2003). An experimental study of a Mediterranean diet intervention for patients with rheumatoid arthritis. *Annals of the Rheumatic Diseases*, 62(3), 208–214. <https://doi.org/10.1136/ARD.62.3.208>

Tanaka, T., Talegawkar, S. A., Jin, Y., Bandinelli, S., & Ferrucci, L. (2021). Association of adherence to the mediterranean-style diet with lower frailty index in older adults. *Nutrients*, 13(4), 1129. <https://doi.org/10.3390/NU13041129/S1>

Valls-Pedret, C., Sala-Vila, A., Serra-Mir, M., Corella, D., De La Torre, R., Martínez-González, M. Á., Martínez-Lapiscina, E. H., Fitó, M., Pérez-Heras, A., Salas-Salvadó, J., Estruch, R., & Ros, E. (2015). Mediterranean Diet and Age-Related Cognitive Decline: A Randomized Clinical Trial. *JAMA Internal Medicine*, 175(7), 1094–1103. <https://doi.org/10.1001/JAMAINTERNMED.2015.1668>

Veronese, N., Stubbs, B., Noale, M., Solmi, M., Luchini, C., & Maggi, S. (2016). Adherence to the Mediterranean diet is

associated with better quality of life: data from the Osteoarthritis Initiative. *The American Journal of Clinical Nutrition*, 104(5), 1403–1409. <https://doi.org/10.3945/AJCN.116.136390>

Victoria-Montesinos, D., Tárraga-Marcos, A., Brazo-Sayavera, J., Jiménez-López, E., Gutiérrez-Espinoza, H., Panisello Royo, J. M., Tárraga-López, P. J., & López-Gil, J. F. (2023). Adherence to the Mediterranean Diet and Health-Related Quality of Life during the COVID-19 Lockdown: A Cross-Sectional Study including Preschoolers, Children, and Adolescents from Brazil and Spain. *Nutrients*, 15(3), 677. <https://doi.org/10.3390/NU15030677/S1>

Ware, J. E., JR, & Sherbourne, C. D. (1992). The MOS SD-36 item short-form health survey (SF-36). I. Conceptual framework and item selection. *Medical Care*, 30(6), 473–483.

Yeung, S. S. Y., Kwan, M., Woo, J., Barchitta, M., Cicero, A., Fogacci, F., & Borghi, C. (2021). Healthy Diet for Healthy Aging. *Nutrients 2021, Vol. 13, Page 4310, 13(12)*, 4310. <https://doi.org/10.3390/NU13124310>

Zaragoza-Martí, A., Ferrer-Cascales, R., Hurtado-Sánchez, J. A., Laguna-Pérez, A., & Cabañero-Martínez, M. J. (2018). Relationship Between Adherence to the Mediterranean Diet and Health-Related Quality of Life and Life Satisfaction Among Older Adults. *The Journal of Nutrition, Health and Aging*, 22(1), 89–96. <https://doi.org/10.1007/S12603-017-0923-2>

Sara Alves, Samuel Encarnação, Carla Agradém, Ana Pereira, Miguel Monteiro, Olívia Pereira, Adília Fernandes,
Helder Fernandes

