

Dietary Patterns and the Promotion of Healthy Aging

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Mini Review

In recent years, the evaluation of diet has moved from a traditional approach, based on the consumption of nutrients, foods or food groups, to a more contemporary view called Dietary Patterns, which seem to be more efficient when one aims to analyze the possible associations between diet, diseases, aging and longevity. Dietary Pattern can be defined as the combination of commonly consumed foods and beverages, and the likely interaction and synergy between food choices and lifestyle, which may impact an individual's health promotion or not [1].

Healthy aging depends on a range of economic, social, physical, personal and behavioral factors that allow a healthy lifestyle, which includes the adoption of a healthy eating pattern through food choices that promote health promotion and reduce the risk of developing chronic non-communicable diseases [2]. Different dietary patterns have been used to evaluate the association between certain patterns and the occurrence of chronic non-communicable diseases. For the older population, the most prominent dietary patterns are Mediterranean Diet-MD, Dietary Approaches to Stop Hypertension-DASH and Mediterranean-DASH Intervention for Neurodegenerative Delay-MIND, in which systematic reviews have shown that diets with greater adherence to the aforementioned standards have lower risks of developing cardiovascular diseases, diabetes, cancer, frailty, besides the positive impact on cognitive function and longevity [3].

It is a source of consensus that the Mediterranean Diet (MD) exerts several protective effects in elderly individuals [4]. In the classical Cohort Study of the Greek population, Trichopoulou et al. [5] showed that greater adherence to MD was correlated with reduced mortality. It is currently acknowledged that populations living in the Mediterranean Sea area have a lower incidence of disease and greater longevity compared to populations living in Northern Europe or the United States [6]. Marin et al. [7] studied the effect of MD on cell senescence and the study concluded that it prevents aging of endothelial cells and decreases intracellular oxidative stress, inflammation, cell apoptosis and telomere shortening.

MD is characterized by a balanced combination of vegetables, fruits, fish, cereals and foods sources of mono and polyunsaturated fats, with reduced consumption of meat and dairy products, and moderate alcohol intake, mainly red wine. The value of this diet lies in its ability to preserve the state of health and increase longevity, as the United Nations Educational, Scientific and Cultural Organization (UNESCO) declared in 2009 [8]. The main components of MD include daily consumption of vegetables, fruits, whole grains, and unsaturated fats (olive oil and nuts), weekly intake of fish, poultry, beans and eggs, moderate portions of dairy, and limit intake of red meat. The moderate use of salt is abundantly replaced by herbs and spices.

Another dietary pattern related to healthy aging is DASH (Dietary Approaches to Stop Hypertension), developed to analyze the effects of the diet on increased blood pressure, which is composed of a diet rich in fruits, vegetables, whole grains and legumes, low content of red and processed meat, refined grains, and sugar. In a recent systematic review and meta-analysis [9], the DASH pattern is also associated with a lower incidence of cardiovascular diseases and diabetes, with a reduction in blood levels of total and LDL cholesterol and body weight and, in elderly people, positive effects on cognitive performance, memory improvement and protective effects in reducing the risk of developing Alzheimer's disease were observed.

More recently, studies have evaluated the role of the MIND diet (Mediterranean-DASH Intervention for Neurodegenerative Delay). The MIND dietary pattern is a nutritional intervention that combines the principles of the Mediterranean diet (MD) and DASH, with recommendations based on compelling findings in the field of diet and its impact on dementia [10]. According to the literature, the main benefits of the MIND diet in the elderly population are related to brain function. Therefore, the greater the adherence to the MIND diet, the lower the cognitive decline and greater protection for Alzheimer's disease and Parkinson's [11]. In addition, a recent cohort study [12] revealed that the benefits of the MIND diet go beyond its neuroprotective function, as greater adherence to the MIND diet was associated with a lower risk of all-cause mortality over twelve years, even after controlling for demographic variables, lifestyle, and health.

Dietary patterns considered healthy and protective contain higher amounts of plant-based foods, sources of nutrients (vitamins and minerals), and bioactive compounds with primarily antioxidant and anti-inflammatory properties, which act by reducing damage and cellular aging. The diets are plant-based, and the term emphasizes the higher consumption of plant foods in relation to the lower consumption of animal foods. Plant-based diets imply the increased use of vegetables such as fruits, vegetables, greens, legumes, whole grains, chestnuts, seeds, herbs and spices. The phytochemicals in these foods can prevent the formation of free radicals, act as antioxidants and anti-inflammatory agents, increase the immune response and serve as anticancer substances, as they can prevent DNA damage [13,14].

The main phytochemicals present in plant foods, with extensive literature proving their benefits, are phenolic compounds such as flavanones from citrus fruits, lignans present in whole grains, legumes and oilseeds, anthocyanin and quercetin from red vegetables, apple and broccoli and resveratrol from grapes, and hydroxytyrosol present in olive oil. Several vegetables are also sources of carotenoids such as beta-carotene, lycopene, lutein and limonene, with important antioxidant and anti-inflammatory action, in addition to indoles, isothiocyanates, cruciferous glycosinates and allyl and organosulfides. It is also important to highlight the role of dietary fibers, especially soluble fibers such as beta-glucan, which affect lipidemia and reduce the risk of cardiovascular diseases [14].

Olive oil in the Mediterranean diet, in addition to being a source of hydroxy tyrosol, contains monounsaturated fatty acids, and has a cardioprotective effect. Its usual consumption can impact the reduction of cardiovascular events, increasing the resistance to oxidation of LDL-cholesterol, reducing platelet aggregation, decreasing endothelial activation, and reducing the expression of pro-inflammatory cytokines. Fish and seafood, also in the Mediterranean dietary pattern, are sources of omega-3 (alpha-linolenic) fatty acids, which act in reducing inflammatory markers, platelet aggregation, blood pressure and triglyceridemia [13].

Conclusion

Diet and food choices are modifiable and determinant risk factors for active aging. Dietary patterns considered healthy and protective, in addition to containing food compounds that act in synergy, are associated with a suitable lifestyle. Although active aging depends on a range of economic, social, physical, personal and behavioral factors that allow a healthy lifestyle, the adoption of a healthy dietary pattern, through food choices that promote health and reduce the risk of development and/or aggravation of chronic non-communicable diseases, has an essential role in longevity with quality of life. Future research should recognize this challenge and seek to unravel the complex interactions between diet, lifestyle, and environmental factors to understand the path to healthy aging.

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