

Mediterranean diet adherence and cancer risk in the Netherlands

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Valorization

The term “valorization” refers to the process of creating societal or economic value from scientific knowledge. In addition to education and research, valorization by law constitutes the third core task of Dutch universities. In this section, we will discuss how our key findings with regard to the potential cancer-protective effect of the Mediterranean diet (MD) in a non-Mediterranean population can be of significance to society apart from their scientific value through publication in impact journals.

Before elaborating on the valorization potential of our findings, we will first briefly introduce the concept of the MD and its key components. In this thesis, the traditional MD was defined as “the dietary pattern typical of the Mediterranean regions traditionally known for olive cultivation in the late 1950s and the early 1960s”. Consumption of plant foods (e.g., vegetables, fruits, legumes, nuts, and whole grains) was abundant in this dietary pattern, whereas the intake of animal foods (e.g., meat and dairy) was limited. Other characteristics of the traditional MD were the high ratio of monounsaturated to saturated fatty acids resulting from the generous consumption of olive oil and a moderate consumption of alcohol during meals [1, 2].

A considerable part of cancer cases is presumably preventable with healthy dietary habits. For the Dutch population, it has been estimated that approximately 10% of cancer diagnoses in 2010 could be ascribed to a less than optimal diet [3]. Society could benefit from nutritional research through the translation of results into dietary guidelines. For example, the World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) has formulated nine recommendations for cancer prevention in their Third Expert Report in 2018 [4] after systematic review of the scientific literature focusing on the relation of diet, nutrition, and physical activity to cancer. According to the Expert Panel, the evidence with respect to a “Mediterranean type” dietary pattern was still inadequate to allow a meaningful recommendation. The findings of this thesis may be included in possible future Expert Reports of the WCRF/AICR and in this way contribute to the formulation of international lifestyle guidelines for cancer prevention.

Regarding the potential of the MD as a dietary strategy specifically aimed at cancer prevention, our results suggested that in the Netherlands, MD adherence may be associated with reduced risks of cancers of the lung, female breast (postmenopausal), esophagus (squamous cell carcinoma in men), and stomach. The prognosis of most of these cancer sites is relatively poor, stressing the importance of preventive strategies. However, as already discussed in Chapter 9 of this thesis, the currently available evidence does probably not suffice to recommend Dutch policymakers to promote the MD specifically for cancer prevention at this time.

In addition to its potentially favorable effect on cancer risk, MD adherence may be associated with various other health benefits, including reduced mortality and lower risks of several chronic diseases. This enables the formulation of a clear, consistent (with respect to disease risk) message to society and is likely to enhance the usability of the MD as a dietary strategy to improve the health status of the population. Furthermore, the MD is generally considered a palatable dietary pattern with a relatively low impact on the environment. Policymakers in the Netherlands could possibly use the MD as a framework to develop a healthy plant-based dietary pattern with the purpose of preventing chronic disease in general (see Chapter 9 for a more elaborate discussion).

The successful implementation of a healthy plant-oriented dietary pattern in the Dutch

population most likely requires an integrative approach involving organized efforts of the government and society as a whole [4]. Policies are warranted that enable and encourage the adoption of the promoted dietary pattern by the community. In order to achieve these aims, such policy actions should influence the three domains of food environment, food system, and behavior change communication [4]. The behavior change domain encompasses educating people about health effects of food and nutrition by raising public awareness [4]. In this respect, (inter)national media attention has been paid to the health benefits of the MD in recent years. For example, our scientific article concerning MD adherence and postmenopausal breast cancer risk has been highlighted on (inter)national news websites. In addition to “unregulated” media attention, which is often concentrated on recent research papers showing positive health effects of MD adherence, Dutch authorities could play a role in promoting and disseminating a MD-derived plant-oriented dietary pattern in a more organized manner. In this instance, the Health Council of the Netherlands (“Gezondheidsraad”) and the Netherlands Nutrition Centre (“Voedingscentrum”) could get involved. Over the past decades, the Health Council of the Netherlands has issued several recommendations for a healthy dietary pattern targeted at the general Dutch population, with the most recent update being published in 2015 [5]. The Dutch dietary guidelines 2015 [5] were formulated by taking the latest scientific evidence concerning chronic disease risk into consideration and integrate information regarding nutrients, foods, and dietary patterns. According to the Dutch dietary guidelines 2015, recommended dietary patterns (including the traditional MD) characterized by a higher consumption of plant foods and a lower consumption of foods from animal origin, positively affect health [5]. The Netherlands Nutrition Centre is a leading authority that is committed to advising the public and health care professionals about healthy and more sustainable dietary habits and aims to encourage people to change their current eating habits accordingly [6]. The Netherlands Nutrition Centre has created the “Wheel of Five” (“Schijf van Vijf”) [5-7]. The “Wheel of Five” 2016 (Figure 1) is a practical translation of the Dutch dietary guidelines 2015 for use in nutritional counseling, which has been complemented with specific recommendations in order to make sure that people meet their energy and nutrient requirements. Activities of the Netherlands Nutrition Centre promoting the dissemination of the “Wheel of Five” by health care professionals include educating this group about the “Wheel of Five” and its components in general, as well as its development and expected health benefits. Furthermore, information, materials, and tools (e.g., leaflets, posters, and explanatory videos) are provided to support the use of the “Wheel of Five” in clinical practice. For the general population, the website of the Netherlands Nutrition Centre contains a wealth of information and tools to help and encourage individuals to make healthier food choices. Along with a description of the “Wheel of Five”, the website features advice, recipes, daily meal plans, and e-tools (e.g., “Schijf van Vijf voor jou” and “Mijn eet-update”) to inspire people [6, 7]. In addition to the actions suggested above, informative presentations concerning the potential health benefits of the MD could be given at conferences for health care professionals, who could in turn transfer this knowledge to patients via nutritional counseling.

When confirmed, the findings of this thesis could contribute to a decrease in morbidity and mortality due to cancer (and possibly other chronic diseases) in the Netherlands through the formulation of dietary guidelines and an increased public awareness of the impact of diet and other lifestyle factors on people’s health. Interestingly, increasing adherence to the MD seemed to be especially associated with reduced risks of cancers with a relatively poor prognosis. In addition to a reduced social burden, the prevention of cancer may have economic benefits, such as decreased health care costs and a reduced loss of productivity



Figure 1 The “Wheel of Five” (“Schijf van Vijf”) 2016

at the workplace. Finally, adoption of a Mediterranean(-like) dietary pattern by the Dutch population is likely to have advantageous effects for the environment as well [8-13]. A study by Van Dooren *et al.* [11] compared greenhouse gas emissions and land use associated with six dietary patterns, including the average Dutch diet of 1998 and the MD, in female adults. Greenhouse gas emissions and land use for the MD were estimated to be clearly lower than for the average Dutch diet [11], which underscores the benefits of adopting a Mediterranean(-like) dietary pattern.

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