



The New Nordic Diet as a prototype for regional sustainable diets

Bügel, Susanne Gjedsted; Hertwig, Jostein; Kahl, Johannes; Lairon, Denis; Paoletti, Flavio; Strassner, Carola

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Programme on Sustainable Food Systems



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**Alexandre Meybeck
and
Suzanne Redfern**

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The new Nordic diet as a prototype for regional sustainable diets

Susanne Bügel,¹ Jostein Hertwig,² Johannes Kahl,¹ Denis Lairon,³ Flavio Paoletti⁴ and Carola Strassner⁵

¹ Department of Nutrition, Exercise and Sports, Copenhagen

² BERAS International Foundation, Järna

³ Nutrition, Obesity and Thrombotic Risk (NORT), Marseille

⁴ Council for Agricultural Research and Economics (CREA), Rome

⁵ Münster University of Applied Sciences, Münster

ABSTRACT

A main challenge in sustainable food systems is to link sustainable production to sustainable diets and consumption patterns. The new Nordic diet (NND) builds on and shares the Mediterranean diet (MD) thinking, but utilizes the ingredients and flavours of a northern climate. In both diets, variation in produce, organic, local production and seasonality are essential, all of which contribute to the preservation of the local landscape and sea, as well as to the health of the consumers. The agricultural biodiversity plays a huge role and provides a variety of plant and animal food products from both wild and domesticated sources. Both diets have been associated with health benefits. The NND is a prototype regional diet taking health, food culture, palatability and the environment into account. Thus, the principles and guidelines could be applied in any region of the world. There are currently activities for initiating, modeling and assessing these transformation processes.

INTRODUCTION

The Western dietary pattern has been shown to be unsustainable in terms of both health and environmental impact (Tilman and Clark, 2014). The prevalence of life-style related diseases has increased dramatically over the last 60 years (Bendixen *et al.*, 2004; Pearson *et al.*, 2005). Obesity alone has doubled since the 1980, and, in 2014, 39 percent of all adults above 18 years were affected by overweight or obesity (WHO, 2016).

Obesity increases the risk of a wide range of serious medical complications, including cardiovascular disease, insulin resistance, type 2 diabetes, gallbladder disease, osteoarthritis, asthma and several cancers (Haslam and James, 2005). Promoting a healthy diet is therefore an important aspect of public health policies in many countries, and the recommendations for healthy eating are very similar across countries (Brug and Oenema, 2006). Overconsumption and waste are also associated with unsustainable environmental impact, such as expansion of agricultural land and emission of greenhouse gases (Wheeler and von Braun, 2013; WHO, 2012; UNEP, 2012). Several authors have identified sustainable diets as an important

future challenge for a healthier, more sustainable and environmentally friendly future (Springmann *et al.*, 2016; FAO/Bioversity, 2010; Macdiarmid *et al.*, 2012; Burlingame and Dernini, 2011).

MEDITERRANEAN DIET AND NEW NORDIC DIET

The traditional Mediterranean diet (MD) has been highlighted as an example of a healthy, culturally embedded and sustainable diet and was recognized as an Intangible Cultural Heritage of Humanity by UNESCO in 2010 (UNESCO, undated). However, the MD seems to be culturally far from the Nordic culture and probably also from the culture of many other countries and regions. Recent studies showing the adherence to the MD in many European countries from 1960 to 2000 show that among the countries least likely to follow the MD dietary pattern are Finland, Norway, Iceland, Sweden and Denmark (Trichopoulou *et al.*, 2005).

In 2003, the New Nordic Cuisine Manifesto was formulated by a group of Nordic chefs at a meeting in Copenhagen (Välimäki *et al.*, 2014) and two years later it was adopted by the Nordic Council of Ministers as the ideology of the New Nordic Food Programme (Nordic Council of Ministers, 2005). The aim was to establish a Nordic cuisine as part of the gourmet world map. Since then restaurants and chefs, focusing on Nordic food, have been rated among the best in the world (Bocuse D'Or, 2015), showing that foods from the Nordic region clearly have great gastronomic potential. Furthermore, a number of scientific studies have been performed that have demonstrated that the new Nordic diet (NND) also has health beneficial effects that seem to be in line with the beneficial health effects of the MD (Adamsson *et al.*, 2011, 2014; Lankinen *et al.*, 2016; Poulsen *et al.*, 2014; Uusitupa *et al.*, 2013). This is not very surprising as the NND and the MD share many similarities; they both call for: more vegetables, fruit, whole grains, fish and non-animal protein; moderate consumption of

low-fat dairy, less meat and sweets; and avoidance of processed food. So the NND shares the Mediterranean thinking, but utilizes ingredients and flavours from a Northern climate (Mithril *et al.*, 2012).

Key principles for the NND are that the food is of Nordic identity, sustainable, of high gastronomic quality and healthy (Figure 1). The dietary guidelines following these four key principles are given in Table 1. The idea is that the food should be produced locally and be from organic production. More calories should be from plant food and less from animal food. Food of



Figure 1. FAO sustainability frameworks and approaches
Source: FAO (2014).

Table 1: The new Nordic diet – general guidelines

1. More fruits and vegetables (a lot more berries, cabbage, root vegetables, pulses, potatoes and fresh herbs)
2. More food from the wild landscapes
3. More whole grains – especially oats, rye and barley
4. More food from the oceans and lakes
5. Meat of a higher quality, but less
6. Choose organic whenever you can
7. More meals closer to nature
8. Throw less away

Source: Mithril *et al.* (2012).

high quality, which exists in abundance in the wild and with high biodiversity, should be included in higher amounts.

HEALTH BENEFICIAL EFFECTS OF NEW NORDIC DIET

As the Nordic countries are different also in relation to local food, these guidelines can be translated into national guidelines and for Denmark, specific guidelines have been identified. Several scientific studies have demonstrated that the NND displays some health benefits on some of the health risk markers, in line with the MD, among these are the Sysdiet, Nordiet, Sydimet and OPUS studies (Adamsson *et al.*, 2011; Poulsen *et al.*, 2014; Uusitupa *et al.*, 2013; de Mello *et al.*, 2011).

The Sysdiet study was a randomized controlled multicentre study performed in six centres in four countries (Finland, Sweden, Iceland and Denmark) comparing the effect of a healthy Nordic diet and an isocaloric control diet (18–24 weeks) on insulin sensitivity, lipid profile, blood pressure and inflammatory markers. The study participants had features of metabolic syndrome (approx. 90 percent) (166 completers, mean age 55 years, BMI 32 kg m², 67 percent women). The study observed decreases in non- high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL)-C/HDL-C ratio, apolipoprotein (apo) B/apo A1 ratio and IL-1 Ra¹ in subjects consuming the healthy Nordic diet compared to subjects consuming the control diet (Uusitupa *et al.*, 2013).

The Sydimet study was a randomized controlled study performed in Finland comparing the effects of a healthy Nordic diet (high in fatty fish, bilberries and whole grains); a whole-grain-enriched diet and a control diet on plasma inflammatory markers in volunteers with impaired glucose metabolism and features of metabolic syndrome (104 completers, mean age 59 years, BMI 31 kg m²; 51 percent women). The study observed decreases in plasma E-selectin in the healthy diet group only and decrease in high sensitivity C- reactive protein (hsCRP) in the healthy diet group and the whole-grain-enriched diet group in individuals not receiving statins (de Mello *et al.*, 2011).

The Nordiet study was a randomized controlled study performed in Sweden comparing the effects of a healthy Nordic diet (rich in plant foods, fruits, berries, vegetables, whole grains, rapeseed oil, nuts, fish and low-fat milk products, but low in salt, added sugars and saturated fats) with a control diet (usual Swedish diet) (six weeks) on LDL-cholesterol, blood pressure

1 IL-1 Ra – member of the interleukin 1 cytokine family.

and insulin sensitivity in mildly hypercholesterolemic subjects (86 completers, mean age 53 years, BMI 26 kg m², 63 percent women). The study observed decreases in total, LDL and HDL cholesterol, in LDL-C/HDL-C ratio and in apo B/apo A1 ratio as well as in systolic blood pressure in the healthy Nordic diet group compared with the control diet group. Furthermore, despite an ad libitum diet, the healthy Nordic diet group also decreased their bodyweight. After adjustment for bodyweight, the significant differences between groups remained for blood lipids, but not for insulin sensitivity and blood pressure (Adamsson *et al.*, 2011).

In the OPUS study the health effects of the NND were compared with the average Danish diet in a free-living but highly-controlled setting in adult subjects with increased risk of metabolic syndrome (147 completers, mean age 42 years, BMI 30 kg m², women 71 percent). The aim of the study was to test whether the NND could be a healthy and attractive alternative to the MD or the DASH (dietary approaches to stop hypertension) diet and easily adopted. The study observed a high compliance to the diet, as well as significant weight reduction and reduction in both systolic and diastolic blood pressure in the subjects receiving the NND compared with the subjects receiving the average Danish diet (Poulsen *et al.*, 2014).

In conclusion, the health potential of the NND is considerable and the diet is well accepted by the participants, which supports the potential of the NND as an alternative to other regional diets, such as the MD.

ENVIRONMENTAL IMPACTS OF NEW NORDIC DIET

The environmental impacts of the NND and of the average Danish diet (ADD) were analysed and compared based on 16 impact categories (Saxe, 2014). When both diet and transport were taken into account, the NND reduced the environmental impact relative to ADD measured by all 16 impact categories. When the content of organic produce was also taken into account, the NND reduced the environmental impact compared with the ADD measures by only 10 of the 16 impact categories, whereas six were increased. So reducing the intake of meat to 35 percent less meat, increasing whole grain products, nuts, fruit and vegetables and excluding most long-distance imports, substantially lowered the environmental impact compared with ADD. Inclusion of organic products into the NND was more advantageous for the environment than the ADD, but less advantageous than the non-organic NND. In some instances organic produce is environmentally inferior to conventional produce and in some cases it is superior. Saxe (2014) concluded that one of the benefits of choosing organic is the long-term effects of excluding pesticides and chemical fertilizers and preserving soil structure, while a disadvantage of choosing organic products, in a Danish context, is the smaller yields and thereby potential for increased land use. These results therefore seem valid in short-term perspectives and for industrialized countries. In developing countries, organic agriculture can improve the present yield and in the long-term perspective it may be the only alternative to a more sustainable approach.

DIET FOR A CLEAN BALTIC

In parallel to the NND the “diet for a clean Baltic” (BERAS Implementation, 2016) has been developed in the Baltic Sea region coming from the special focus on regenerative

agriculture, to reduce the eutrophication of the Baltic Sea (Granstedt *et al.*, 2008). This dietary concept focuses more on the link between food consumption and farming practices rather than on health impact and calculates the global warming potential of the diet. Positive effects on sustainability issues have been documented (Larsson, Granstedt and Thomsson, 2012). The principles of the diet for a clean Baltic have also been tested out in cities in Poland, Lithuania and Spain (EU URBACT, undated). The concept is thus prepared to be spread to other regions in the world.

NEW NORDIC DIET AND THE LOWLAND DIET

Recently, NND recommendations have been transferred to a region in the Netherlands (van Dooren and Aiking, 2014). The authors calculated sustainability and health impact by self-developed scores. Each score consists of different indicators: the health score consists of ten nutritional characteristics, the sustainability score of greenhouse gas emissions and land use. The impact of NND recommended and quantified grams of product per day (Mithril *et al.*, 2012) were compared with those from the average Dutch diet and the MD, as well as a historical lowland and an optimized lowland diet (LLD). The optimization was done by linear programming but for the historical LLD only. Consequently the optimized LLD showed markedly less impact on greenhouse gas emissions and land use compared with NND. Nevertheless, NND showed the highest score for the health impact, when all different diets were compared. Further approaches, transferring the NND concept to other regions in the world, may therefore focus on transferring principles and guidelines and adopt them to the traditional local diets, when recommendations will be set up in terms of grams or percent energy intake per day. Furthermore, the identification of criteria plays a crucial role in evaluation, monitoring and benchmarking these transformation processes (Auestad and Fulgoni, 2015).

POLITICAL SUPPORT

The NND has gained strong political support by the Nordic Council of Ministers. In 2005, the chefs behind the New Nordic Cuisine Manifesto passed the baton to the Nordic Council of Ministers, which put new Nordic food on the political agenda. The Nordic Council of Ministers for Fisheries and Aquaculture, Agriculture, Food and Forestry adopted a venture that aimed at developing the concept of new Nordic food into a lifestyle that will be better for nature, for people and for the Nordic society as a whole. This was developed through the two programmes New Nordic Food 1 + 2, and will now be carried on into New Nordic Food 3 (Nordic Council of Ministers, 2012).

So far the programme initiated by the Nordic Council of Ministers seems to be successful and overall the NND has been shown to be healthier than average Nordic diets and can be used to promote the Nordic region as a green and clean region, which may also attract sustainable food tourism.

CONCLUSIONS

Westernization of our diets is linked to most life-style diseases; therefore scientists have recommended translation of dietary recommendations into more healthy and sustainable diets (Bere and Brug, 2009). In the Mediterranean area, the erosion of the traditional

MD pattern in all countries around the Sea has made a group of scientists elaborate new recommendations (including a pyramid) for implementing the MD for today's people accounting both for cultural traits, healthy nutrition and environmental aspects (Sáez-Almendros *et al.*, 2013). Attempts to put this recommendation into practical application in some regions are on going. In the Nordic region, chefs, scientists, politicians and public movements have, together and in parallel, been successful in defining a NND, not by introducing new food items, but by reintroducing and redefining food items already growing or living in the Nordic region.

The NND is a prototype regional diet taking health, food culture, palatability and the environment into account. It has been successfully tested in some regions in Northern Europe and firstly transferred to a region in the Netherlands. There is a great potential in transferring NND to any region in the world by applying its principles and guidelines to transformation of local, traditional dietary patterns to be more healthy and sustainable.

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