Food-Based Dietary Guidelines in Austria

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Key Words

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Abstract

The translation of nutrient-based dietary guidelines (NBDG) into food-based dietary guidelines (FBDG) is part of a nutrition policy at the national level to counteract the increasing prevalence of chronic diseases that are related to diet and physical activity. In Austria, first steps have already been taken and several promising FBDG have been introduced to the consumer. These FBDG are basically consistent as they use the same concept, a nutritive approach which is based on the 'DACH Reference Values for Nutrient Intake'. Minor differences arise in the translation of this NBDG into food servings. The 'Nutrition Circle' and pyramids are the common forms used to visualize FBDG for the Austrian population. The 'Three-Dimensional Food Pyramid', which was introduced in 2005 by the German Nutrition Society and has been adopted by the Austrian Nutrition Society, combines quantitative and qualitative aspects. A not less promising approach has been introduced by the Austrian Nutrition Society – the 'Module System' as a visual aid to facilitate the promotion and dissemination of FBDG. Together with the Austrian Nutrition Reports, FBDG are important measures to improve the nutritional situation in Austria. Upcoming results of ongoing nutrition monitoring will evaluate the success of the current measures taken in Austrian nutrition policy.

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Introduction

Chronic non-communicable diseases (NCDs), including heart disease, stroke, cancer, diabetes mellitus, and obesity, caused 86% of deaths and 77% of the disease burden in the WHO European Region, yet they are largely preventable. The main modifiable risk factors include unhealthy diets and physical inactivity [1].

To reduce the burden of chronic diseases that are related to diet and physical activity, adequate nutrition policies have to be developed and maintained. The translation of nutrient-based dietary guidelines (NBDG) into food-based dietary guidelines (FBDG) is part of a nutrition policy at the national level as recommended by the World Health Organization (WHO). NBDG are directed to health professionals; for the consumer such guidelines are impractical and can hardly be translated into everyday eating practices. FBDG have proved to be an appropriate health policy measure for the improvement of nutrition. Together with specified population-based dietary goals they build the basis for an efficient nutrition information/communication [1].

Nutrition monitoring systems are essential to describe the current nutritional situation in a country, to give recommendations for an improvement of unfavorable eating habits and to track progress towards recommended dietary population goals.

The Austrian Nutrition Report 2003 [2] described the following inadequacies in current dietary habits at the population level:

- High energy intake not adjusted to the actual low energy expenditure
- High fat intake

- High intake of saturated fatty acids (of animal origin) and low intake of vegetable oils as well as the unfavorable ratio of n-6:n-3 unsaturated fatty acids
- Low intake of dietary fibers
- Low intake of folate, iodine, calcium and vitamin D.

To correct these inadequacies, several options have been proposed in the Austrian Nutrition Report, including an enhanced formulation and implementation of FBDG.

The present analysis focuses on the current situation of FBDG introduced to the Austrian population.

Healthy Eating Guidelines for Austrians

A specific chapter in the Austrian Nutrition Report 2003 [2] addressed FBDG in general and suggested guidelines for healthy eating in Austria. These guidelines are based on the results of the latest assessment of the nutritional situation in Austria. There is still need to improve the dietary behavior of the Austrian population, particularly in respect to the prevention of NCDs. In comparison to the results of the preceding Austrian Nutrition Report 1998 [3], critical nutrients and population groups at risk for inadequate nutrient intake remained mostly unchanged. Campaigns, like the '5-a-day' program to increase fruit and vegetable consumption, were able to ameliorate the dietary behavior but not in the long run. To contribute to a more lasting improvement of the diet in Austria, specifically emphasizing cultural aspects, the following guidelines have been proposed and are summarized in table 1.

1. Enjoy a variety of foods

The availability of a variety of high-quality foods over the whole year is nowadays beyond comparison to former times. Regardless of reports on occasional food scandals in media, the quality and safety of the available foods is getting better and better and with some nutritional knowledge it should be easy to choose ones most suitable foods. A diverse and balanced diet is crucial to a healthy diet. There is no single healthy, unhealthy or forbidden food; it is the balance and combination that make up a wholesome nutrition.

2. Eat more carbohydrate-rich food and side dishes – eat less fried foods

The bad reputation of the traditional Austrian diet with its abundance in sweet dishes made from white flour is somewhat iniquitous, although there are a few improvements to be made:

Table 1. Healthy eating guidelines for Austrians

1. Enjoy a variety of foods
2. Eat more carbohydrate-rich food and side dishes – eat less fried foods
3. Eat plenty of fruit and vegetables – take 5 a day
4. Eat less fat and fat-rich foods
5. Drink enough but choose your drinks reasonably
6. Enjoy your foods
7. Stay active and fit with physical activity

- Use less sugar when cooking or baking; instead prefer dried or fresh fruits as sweeteners
- Use wholemeal instead of white flour and prefer products prepared with wholemeal flour
- Fried food must not be completely avoided, but should only be eaten occasionally for example as special festive meals.

3. Eat plenty of fruit and vegetables – take 5 a day

Fruit and vegetables are crucial for a healthy diet. Many epidemiological surveys suggest that an increased intake of fruit and vegetables affords protection from a number of diseases. The variety of fruit or vegetable has less importance than good taste so that the food is enjoyed and therefore eaten. Fruit should however be fresh and vegetables not be cooked extensively. In this regard, fruit and vegetable juices are a good complement. Fruit and vegetables should ideally be part of every meal and also be chosen as snacks.

In fact, one cannot go wrong with this food class, as fruit and vegetables are always a good choice, supplying so many important nutrients, they should account for the major part of the daily diet.

4. Eat less fat and fat-rich foods

Fat, in its pure visible form (i.e. butter, margarine and oil), as well as the hidden one that is contained in many foods like sausage and cheese for instance, but also mayonnaise, sauces and dressings as well as many sweets, supplies a substantial part of our daily energy intake that is mostly too high leading to overweight in many Austrians. Moreover, fat intake can also contribute to high cholesterol levels and subsequently favor the occurrence of coronary heart disease, so that reducing the fat content of the diet is among the most important measures to prevent these risk factors and diseases.

Therefore, fat should be used sparingly in cooking and it is advisable to rely on vegetable fats. However, fat foods

must not be avoided completely, but should again only be eaten occasionally.

5. Drink enough but choose your drinks reasonably

With an average of 1.6 l liquid intake in Austria is very low. Especially children and elderly people should take care of their fluid intake, but also all other persons need to drink sufficiently to maintain the body's water balance.

However, not only drinking in itself matters but also the kind of drink. Soft drinks that are rich in sugar, alcoholic beverages like beer and wine, coffee and black tea should be consumed as special enjoyments in moderation. They are not suitable to maintain the fluid balance. Instead water, diluted fruit juices or herbal teas should be preferred as there is virtually no upper limit for their intake.

Drinking reasonably means also to be careful with alcoholic drinks. Alcohol in itself is harmful, regardless of any contrary reports sometimes claimed by the media. There are almost no health indications beyond enjoyment for the consumption of alcoholic beverages, therefore they should be drunk in moderation.

6. Enjoy your foods

Daily nutrition is not a complicate affair. Observing the aforementioned guidelines takes us already a lot nearer to a healthy way of nutrition.

Delighting in one's food is as important as the sufficient supply of essential nutrients and the right amount of energy. Therefore, foods considered as unhealthy like chocolate, cream tart or fat meat are certainly allowed as is a little debauchery on festive days. The important thing is to enjoy eating these foods, and to do it only occasionally.

Accordingly, food should be chosen and handled thoughtfully, preferring high-quality products even though these might be more expensive than the mass-produced food sold in many supermarkets. Care should also be taken when preparing and serving meals.

An epicurean handling of our food helps us to eat with full awareness enjoying it with all senses and to concentrate on the taste, so that quantity is no longer the only criterion.

7. Stay active and fit with physical activity

Nutrition is not the only determinant for health. Physical activity backs a healthy way of eating and is amidst the most important factors for a better health. However, it is not sufficient to do some sports only on the weekend

but to be active every day, for example by going by bicycle instead of the car, using the stairs instead of the elevator, taking a walk instead of watching TV. Physical exercise is always exhausting and overcoming idleness is not as easy. However, the great and multiple health benefits make it worthwhile, and along with practice come the pleasure in physical activity.

In general, FBDG should ensure that the nutrient needs of the population are covered and contribute in reducing the risk of chronic diseases. NBDG are a necessary starting point to develop FBDG. For the German-speaking countries (Germany, Austria, and Switzerland) NBDG exist in the form of the 'DACH Reference Values for Nutrient Intake' which are issued by the German Nutrition Society (DGE), the Austrian Nutrition Society (ÖGE), and the Swiss Society for Nutrition Research (SGE)/Swiss Nutrition Association (SVE) [4]. These standards for nutrient intake are also used to assess the diet of Austrian population groups.

Visualizations of Food-Based Dietary Guidelines in Austria

Besides the 'Healthy Eating Guidelines for Austrians', other FBDG already exist or are currently being developed in Austria. Visual aids of FBDG are essential to facilitate the promotion and dissemination of guidelines and to increase the comprehensibility to assist consumers selecting a diet that is adequate in nutrients and health-promoting. The most recognized visualizations of FBDG in Austria are the following:

Nutrition Circle and Three-Dimensional Food Pyramid

The so-called 'Nutrition Circle' ('Ernährungskreis') of the German Nutrition Society has already a long tradition in German-speaking countries. The latest revision of the Nutrition Circle happened in 2004 [5] and is based on the 'DACH Reference Values for Nutrient Intake'. The Nutrition Circle is a visual aid with seven segments representing recommended food groups which are quantitatively balanced to ensure adequate supply with all essential nutrients and to avoid overconsumption of (saturated) fat, cholesterol, salt and others.

In a next step to combine the quantitative with qualitative aspects, the Nutrition Circle has been extended to a 'Three-Dimensional Food Pyramid' [6]. Each of the four sides of the pyramid ('triangles') is allocated to particular foods: (1) foods of plant origin; (2) food of animal

origin; (3) lipids and vegetable oils, and (4) beverages. In each triangle foods are categorized according their nutritional quality; foods with high nutritional quality are closer to the base whereas less desirable foods are allocated closer to the tip of the respective triangle. More details and images about these guidelines can be found in Stehle et al. [6].

The Nutrition Circle and the Three-Dimensional Food Pyramid have been adopted by the Austrian Nutrition Society and both are disseminated to health professionals and to the consumer.

Nutrition Pyramid

In 2005 the 'Fund for a Healthy Austria' (Fonds Gesundes Österreich, FGÖ) together with the Ministry of Health issued the 'Nutrition Pyramid' (Ernährungspyramide) (fig. 1). The Nutrition Pyramid is accompanied by campaigns using TV spots and advertisements in print and online media. Thus, the campaign is able to reach a broad audience. According the FGÖ, the campaign seeks to reduce risks of disease from poor nutrition and to help Austrians acquire a taste for healthier ways of eating and drinking [7].

The Nutrition Pyramid of the FGÖ uses the concept of the initial Food Guide Pyramid of the United States Department of Agriculture (USDA) [8, 9], which translates NBDG into a range of servings for the five major food groups (grains, fruits, vegetable, milk, and meat) to ensure an adequate supply of essential nutrients and on the other hand, restrict intake of fat, saturated fat, cholesterol, sugar, sodium, and alcohol. Unlike the USDA Food Guide Pyramid, the Nutrition Pyramid incorporates beverages at the base of the pyramid and the grain group has changed places with the fruit/vegetable group. A likely explanation for the latter is that fruits and vegetables taken together have quantitatively more weight than the grain group (as can also be seen in the Nutrition Circle). Finally, foods which should be consumed in less quantity, including lipids and sweets, have been more differentiated in the tip of the Nutrition Pyramid. The serving sizes of the different food groups follow the current recommendations of the German Nutrition Society [10], thus the Nutrition Pyramid is also based on the 'DACH Reference Values for Nutrient Intake'.

Guidelines for Cereals, Potatoes and Products Thereof: A Module System

In 2005, the Austrian Nutrition Society commenced to develop FBDG specifically for Austria taking the cultural aspects of diet in Austria into account. The guide-

Fig. 1. Nutrition pyramid of the 'Fund for a Healthy Austria' [from 7, with permission].

lines follow the recommendations of the Food and Agricultural Organization (FAO)/WHO [11], the CINDI program of the WHO [12] and the EURODIET project [13].

Objectives of the guidelines

- Presentation of the scientific support for FBDG of different food groups, i.e. in a first step for cereals, potatoes and products thereof
- NBDG shall be translated into a clearly comprehensible food-based form with better practical applicability
- The DACH Reference Values for the intake of carbohydrates (at least 50% of daily energy intake) and dietary fiber (at least 30 g/day) shall be implemented by means of specific food-based recommendations for the intake of cereals, potatoes and products thereof
- Disseminators in nutritional consultation, education and information as well as food producers shall get a sound basis for argumentation. Disclosure of a balanced diet shall be facilitated by applicable and coherent recommendations
- The gap between the actual and the recommended consumption of cereals, potatoes and the products thereof shall be closed or at least reduced
- The base of a health-promoting diet shall be presented to consumers. They shall be encouraged to make a balanced food choice while still enjoying what they eat.

Aims of the guidelines

- Maintenance and improvement of health in the Austrian population
- Reduction of the incidence of nutrition-related diseases
- Applicable support in ensuring adequate nutrient supply of the Austrians
- Detailed self-explanatory instructions regarding food choice
- Encouragement to choose seasonal and regional food
- Base for further means to disseminate the Austrian nutritional guidelines.

In a first step, guidelines for cereals and potatoes ('Leitlinie für Getreide- und Kartoffelprodukte') were issued. These FBDG are quantitative guidelines for children and adults, which take respective energy and nutrient requirements into account as well as the prevention of NCDs. The corresponding quantities for the daily consumption of cereals, potatoes and products thereof are given in tables 2 and 3. The recommended amounts for adults are based on the Nutrition Circle [10], whereas for children and adolescents they are derived from the guidelines of the Research Institute for Children's Nutrition (FKE) in Dortmund, Germany ('Optimix') [14]. The amounts for each single food are given as a range according to individual energy requirements with the lower values applying to a lower energy intake and the upper values to a higher one.

The Module System: 'Take Advantage of 5 Portions'

The novelty is the visualization of these quantitative recommendations (fig. 2): a module system accompanied by the slogan 'take advantage of 5 portions' ('5 Portionen, die sich lohnen') suggesting the consumption of five servings taken from the cereal and potato food group [15]. With this proposal the Austrian Nutrition Society offers a self-explanatory and consumer-oriented model addressed to health professionals and all stakeholders within the food chain.

One module corresponds to:

- 1–1.5 slices of bread (1 slice = approx. 50 g, so that 4 'bread blocks' supply the 4–6 slices or 200–300 g of bread recommended by the DGE)
 - 1–1.5 bread rolls
 - 5–6 tablespoons of muesli or cereal flakes/breakfast cereal (corresponding to about 50–60 g of rolled oats or other ready-to-eat cereals)
 - 200–250 g cooked pasta (65–80 g uncooked)
 - 150–180 g cooked rice or other cereal (50–60 g uncooked)
 - 200–250 g potatoes (3–4 medium-sized)
- Whole grain products should be preferred.

Why Five Servings?

This is based on the assumption of a daily consumption of four slices of bread (which can be partly replaced by one serving of ready-to-eat cereals) and one serving of potatoes, pasta or rice. Graphically, these servings are depicted as boxes (= modules). A text insert in each of the boxes lists alternatives corresponding to one serving. In this way the modules can be substituted for each other.

Table 2. Intake recommendations for adults for the cereal and potato group [10]

Food	Recommended intake
Bread	4–6 slices per day (200–300 g) (1 slice corresponding to approx. 50 g)
Cereal flakes, breakfast cereal	1–2 slices of bread can be substituted by cereal (breakfast) flakes. One slice is equivalent to 50–60 g of flakes
Cereal products and potatoes	One portion of potato per day (200–250 g of cooked potato or 3–4 medium-sized) or 1 serving of pasta (75–90 g uncooked, 200–250 g cooked) or 1 serving of rice or other cereal (50–60 g uncooked, 150–180 g cooked)

Table 3. Intake recommendations for children and adolescents for the cereal and potato group [14]

	Age, years						
	1	2–3	4–6	7–9	10–12	13–14, m/f	15–18, m/f
Bread/cereal (incl. flakes), g/day	80	120	170	200	250	300/250	350/280
Converted to bread slices 50 g	1.5	2.5	3.5	4	5	6/5	7/5.5
Potatoes, pasta, rice, cereals, g/day	80	100	130	150	180	250/200	280/230

Fig. 2. Pool of modules for the food group ‘cereals, potatoes and products thereof’ [from 15, with permission].

The following applies basically: bread and rolls should be eaten more than once a day and one serving of pasta, rice or other cooked cereal or potatoes once a day.

Booklet for Consumers

The scientific background of these guidelines as well as the module system shall be presented in an application booklet addressing the consumers after having been adapted for these target groups. Contents of this booklet will be among others:

- The importance of cereals, potatoes and products thereof for the human diet
- Explanations referring to the module system
- Information about products of the cereal and potato food group (varieties of cereal, flour and baked goods)
- Culinary hints and recipes
- Advices for the optimization of fiber and fat intake
- Information about purchase and storage
- Answers to frequently asked questions.

Moreover, the booklet for consumers shall offer practical support for health professionals in their daily counseling practice.

Conclusion and Outlook

The presented FBDG for Austria are basically consistent as they use the same concept, a nutritive approach which is based on the ‘DACH Reference Values for Nutrient Intake’. Minor differences arise in the translation of this NBDG into food servings. The ‘Nutrition Circle’ and pyramids are the common forms used to visualize FBDG for the Austrian population. The ‘Three-Dimensional Food Pyramid’, which was introduced in 2005 by the German Nutrition Society and has been adopted by the Austrian Nutrition Society, combines quantitative and qualitative aspects and makes use of sophisticated dissemination tools, like a web-based virtual and interactive application. A not less promising approach has been introduced by the Austrian Nutrition Society – the ‘Module System’ as a visual aid to facilitate the promotion and dis-

semination of FBDG, probably especially to younger target groups.

However, an evaluation may be required to assess the comprehensibility and success of the presented guidelines. Altogether the introduced FBDG are meant to contribute to an improvement of nutrition of all Austrians for a better health promotion. This offers the chance to clearly reduce the incidence of many nutrition-related diseases, thus contributing to the reduction of health system costs and – probably being the most important – to an improvement of overall quality of life.

Together with the Austrian Nutrition Reports, FBDG are important measures to improve the nutritional situation in Austria. The continuation of the nutrition monitoring in Austria is in this regard the only possibility to

observe changes, either positive or negative, in dietary trends and to adapt nutrition policy accordingly. Upcoming results of ongoing nutrition monitoring will evaluate the success of the current measures taken in nutrition policy.

As scientific evidence in general, food-based guidelines also underlie several developments making them not fixed for ever. Principle changes for the given guidelines, however, are not to be expected in the future. Basing on changes of the population structure it can be expected that specific guidelines for specific groups of the population have to be developed and established. This will be one of the main tasks of nutritional sciences for the coming years.

References

- 1 World Health Organization: Diet, Nutrition and the Prevention of Chronic Diseases. Report of a Joint WHO/FAO Expert Consultation. WHO Tech Rep Ser No 916. Geneva, WHO, 2003.
- 2 Elmadfa I, Freisling H, Koenig J, et al: Austrian Nutrition Report 2003, ed 1. Vienna, Institute of Nutritional Sciences, University of Vienna, 2003.
- 3 Elmadfa I, Burger P, Koenig J, et al: Austrian Nutrition Report 1998. Vienna, Institute of Nutritional Sciences, University of Vienna, 1998.
- 4 DACH – German Nutrition Society (DGE), Austrian Nutrition Society (ÖGE), Swiss Society for Nutrition Research (SGE), Swiss Nutrition Association (SVE): Reference Values for Nutrient Intake. Frankfurt/Main, Umschau Braus, 2000.
- 5 German Nutrition Society (DGE): Der neue DGE-Ernährungskreis. DGE Info 4/2004: 54–56.
- 6 Stehle P, Oberritter H, Büning-Fesel M, et al: Grafische Umsetzung von Ernährungsrichtlinien – traditionelle und neue Ansätze. Ernähr Umsch 2005;52:128–135.
- 7 Fund for a Healthy Austria (FGÖ): Die Ernährungspyramide baut auf. 2005. online: <http://www.fgoe.org/aktivitaeten/infos-und-aufklaerung/kampagnen/archiv-kampagnen/ernaehrung-2005> [29.11.2006].
- 8 US Department of Agriculture/Center for Nutrition Policy and Promotion: The Food Guide Pyramid. Home Garden Bull 1992; 252
- 9 US Department of Health and Human Service, US Department of Agriculture: Dietary Guidelines for Americans 2005, ed 6. Washington, US Government Printing Office, 2005.
- 10 German Nutrition Society (DGE): DGE-Ernährungskreis – Lebensmittelmengen. DGE Info 5/2004:73.
- 11 FAO/WHO: Preparation and use of food-based dietary guidelines. Report of a joint FAO/WHO consultation, Nicosia, Cyprus, Nutrition Program WHO, Geneva, 1996.
- 12 WHO Regional Committee for Europe: CINDI dietary guide, 2000.
- 13 University of Crete, School of Medicine: Core report EURODIET. Nutrition & Diet for Healthy Lifestyles in Europe. Science & Policy Implications, 2000.
- 14 Forschungsinstitut für Kinderernährung Dortmund: optimix – Empfehlungen für die Ernährung von Kindern und Jugendlichen. Aid (ed), 2001.
- 15 Austrian Nutrition Society (ÖGE): Leitlinie für Getreide- und Kartoffelprodukte. Ernähr Akt 2005;2:1–16.