



The feasibility of the Planetary Health Diet in the everyday lives of low-income households

Potential and limitations

Sarah Dreckmann, Christine Brombach

Abstract

The implementation of a healthy and sustainable diet such as the Planetary Health Diet (PHD) is becoming increasingly relevant in light of ecological and health challenges. At the same time, there is frequent discussion in society about the practical implementation of such a diet, especially for low-income households. This article examines whether a diet based on the PHD is financially feasible for families affected by low-income in Germany (based on citizen's income) and Switzerland (based on social welfare) and what other factors influence its implementation. To this end, a price calculation was made based on a weekly plan from the *Klimatopf* cookbook, and a practical test was carried out to assess its suitability for everyday use. The results show that financial feasibility is given. However, the time required for implementation is a major obstacle. Aspects such as nutritional competence and willingness to implement were not considered in the study yet appear to be relevant.

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Germany it was US\$31.8 billion [4]. Studies show that people with a lower level of education and unemployed people are more likely to be overweight than people with a high level of education or those in employment [5, 6]. The proportion of people with obesity is 3.9 percentage points higher among the unemployed than among those in employment. One obvious explanation would be that a healthy and sustainable diet is not feasible for low-income households [7]. This article therefore addresses the question of under what conditions a sustainable and healthy diet is possible for low-income households.

Sustainable and healthy nutrition and its challenges

“Deriving nutritional recommendations that are both sustainable and health-promoting is of utmost relevance and complexity” [8]. However, the National Nutrition Survey II shows that the idea of a sustainable and healthy diet according to the recommendations of the German Nutrition Society (DGE) or the Planetary Health Diet (PHD) differs from the actual reality [9]. Nevertheless, a sustainable change in our diet is necessary, which requires not only individual adaptation but also structural framework conditions and social acceptance [10, 11]. Four key aspects are crucial for a successful change in diet:

1) Time for implementation: Time is an important factor for a successful change in diet. The effort involved in preparing healthy meals should not be underestimated, as incorporating a healthy diet into daily life over the long term is only possible with sufficient planning and organization [11].

Introduction

Climate change is one of the most pressing issues of our time [1]. Global food production is the single largest contributor to exceeding planetary boundaries [2]. At the same time, more and more people in Western economies are suffering from obesity and the resulting health problems [3]. These health problems attributable to obesity place a considerable financial burden on healthcare systems. In Switzerland, public healthcare expenditure due to high body mass index (BMI) was US\$5.9 billion, and in



- 2) Knowledge and understanding of recommended nutrition and its application: In Germany, knowledge about nutrition and food preparation is not necessarily taught in educational institutions. If this knowledge is not imparted at home, it can be challenging to acquire it independently [12].
- 3) Financial requirements: Money is needed to buy food. In Western countries in particular, unhealthy foods are usually cheaper than healthy foods, which makes it difficult to eat healthily [13].
- 4) Willingness to implement: Without the individual's own willingness to implement, it is difficult to integrate changes into everyday life on a permanent basis.

Changes in eating behavior are complex and can only be achieved in the long term. As a possible approach to understanding eating behavior, the COM-B model by Michie et al. is used here as a behavioral theory approach to systematically analyze factors influencing behavior. The model assumes that behavior arises from the interaction of three main components: capability, opportunity, and motivation [14].

Capability refers to both physical parameters and the prerequisites an individual needs to be able to perform a certain behavior. These include knowledge, skills, and practical competencies, such as cooking skills.

Opportunity encompasses external, situational factors such as the social and cultural environment or material resources that may enable or hinder behavior.

Motivation encompasses the conscious and unconscious psychological processes that trigger or maintain behavior, including values, beliefs, emotions, and routines.

The COM-B model emphasizes the **interdependence** of these three factors: motivation influences both the ability and the perception and use of opportunities. In the context under investigation, a specific intervention via communication channels aims to promote motivation and strengthen confidence and certainty in dealing with prescriptions.

In summary, the model can also be understood as a threefold question: *Why* does someone act (motivation), *what* can the person do (ability), and *how* is the behavior enabled by the environment (opportunity)?

The Planetary Health Diet

The EAT-Lancet Commission has “developed global and scientific targets for healthy diets and sustainable food production [...]” [2]. The PHD is a proposal for a change in diet. The PHD focuses on increased consumption of plant-based foods such as fruits and vegetables, whole grains, legumes, nuts, seeds, and unsaturated fatty acids. Fish, seafood, and poultry, on the other hand, should be consumed in moderate amounts, and red meat, sugar, saturated fatty acids, dairy products, and starchy vegetables should only be consumed in small amounts [15]. The PHD differs from the Food-Based Dietary Guidelines (FBDG) of the DGE in its generalist approach. The DGE's FBDGs are adapted to German culture and are based on a consumer-friendly analysis of scientific evidence, while the PHD relies on the scientific facts of a global diet that combines sustainability and health [8]. The DGE's FBDGs were revised in 2024 and now take greater account of aspects such as environmental sustainability [16]. Although many international experts recommend the PHD as a reference for sustainable nutrition, there is also criticism. Among other things, the “approach used to derive the recommendations, their nutritional consequences, and the costs at the individual and societal level” [8] are questioned. The authors describe the “The Planetary Health Diet in contrast to the food-based dietary guidelines of the German Nutrition Society (DGE)”. They conclude that a comparison of the two dietary recommendations is only possible “to a limited extent due to differences in the methodology of derivation as well as the use of different methods of presentation” [8] and that it is therefore difficult to make globally applicable recommendations because the regional differences are too great. The DGE is fundamentally committed to supporting more sustainable, plant-based diets [8, 16].

Nutritional poverty

“The term nutritional poverty describes the structural links between socioeconomic status, nutrition, and health” [3]. A common version of nutritional poverty in Germany is that those affected are unable to eat healthily due to financial constraints. Instead of healthy but expensive fruit and vegetables, people affected by poverty tend to choose foods that are high in energy but lower in cost. This unbalanced, nutrient-poor, energy-dense diet can lead to overweight and/or obesity [3]. Thus, “poverty is a health risk” [3]. While malnutrition poses an immense health risk in countries of the Global South, overeating has become a growing health problem in countries of the Global North [3]. The consequences are cardiovascular or metabolic diseases, which not only occur more frequently but also at a significantly earlier age [17, 18]. The German government's latest report on poverty and wealth refers to “unhealthy eating habits” among people affected by poverty [19]. In industrialized countries such as Germany and Switzerland, obesity has become a symbol of poverty [20, 21].



In addition to the widely held view that nutritional poverty is not possible for financial reasons, there is also the opinion that unhealthy eating is due to a lack of information, skills, and priorities [7].

Methodological approach

The study presented here investigates whether unhealthy eating among people affected by poverty is primarily the result of financial constraints or whether it is influenced by other factors such as priorities, knowledge, or motivation. Based on the assumptions presented in the research, the following research question can be derived: Is a healthy and sustainable diet such as the PHD feasible for people affected by poverty?

The research question was examined on the basis of four dimensions and assigned to the three factors of the COM-B model. The four dimensions are: time (opportunity), knowledge and skills (abilities), financial conditions (opportunities), and willingness to implement (motivation).

As part of the study, the scenario of a healthy and sustainable diet based on the PHD was calculated for a family affected by poverty with two teenage children. The calculations were performed once for a family receiving citizen's income in Germany and once for a family receiving social assistance in Switzerland. The weekly meal plan for the families was taken from *Klimatopf* [22], a cookbook for sustainable and healthy eating with recipes based on the PHD. The quantities recommended in the PHD were always added up for a whole week by food group and not distributed linearly over the days of the week. For example, instead of consuming 13 g of eggs [15] per day as suggested in the PHD, one whole egg is consumed on one day and no eggs on the other days, so that the target values are achieved in the weekly total. The test took into account the quantities actually used in the recipe. It was assumed that only the actual recipe quantity was taken from a package and the rest was used for other purposes. A flat rate per week was assumed for spices. For beverages, the DGE recommendation of 1.5 L of mineral water per day was taken into account. The DGE recommendation was also used as the basis for daily energy consumption. This corresponds to between 1800 and 2400 kcal for adults under 51 years of age with light activity, and between 1900 and 2600 kcal for adolescents. The weekly meal plan in the climate pot is between 1900 and 2200 kcal per day and could therefore be applied directly [22]. The prices for the food used were collected on the basis of store checks in Germany and Switzerland in spring 2025, assuming that families mainly shop at discount stores. Individual supplementary purchases were then made in other supermarkets and retail stores.

Test design and results

Test family in Germany

A family of four in Germany with two teenage children falls into standard needs levels 2 and 4 under the citizen's income scheme and thus has a monthly budget of €1,954 [23]. The share available for food and beverages is determined using flat rates adopted by the Federal Ministry of Labor and Social Affairs [24]. In the experiment, a linear distribution of the budget over four calendar weeks per month is assumed, resulting in a weekly income of €155.65 available for food expenses. Based on the weekly plan from *Klimatopf* [22] (♦ Figure 1) and the food prices surveyed at Aldi, Edeka, and Rewe in Germany, the actual cost of food according to the PHD was calculated to be €138.47.

Test family in Switzerland

A family of four in Switzerland (canton of Zurich) with two teenage children receives CHF 2,271 per month as social assistance, which corresponds to a flat rate of CHF 568 per person per month. The Swiss Conference on Social Welfare (SKOS) basket of consumables goods assumes a flat rate of 41.3% for food, beverages, and tobacco products. As an assumed social assistance for the family of four, this would amount to CHF 937.92 per month [25]. In the experiment, a linear distribution of the budget over four calendar weeks per month is assumed, resulting in a weekly income of CHF 234.48 available for food expenditure. Based on the weekly plan from the *Klimatopf* cookbook [22] and the food prices surveyed at ALDI, Lidl, and Migros in Switzerland, the actual cost of nutrition according to the PHD was calculated to be CHF 203.18.

Practical test: one week of the Planetary Health Diet according to the *Klimatopf*

In a practical test, the first author cooked the same weekly meal plan used for the test families for a single-person household. The focus of the practical test was not on the costs, but on the practicability, feasibility, and experiences of the weekly meal plan. The results were recorded in a separate diary. The following findings were noted:

- Individual adjustments to portion sizes and the intervals between meals are necessary to

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast	granola with apricots + soy milk (250ml) 327 kcal	2x quick rolls + hummus 458 kcal	apple tart + autumn juice 521 kcal	oatmeal + soy yogurt (150g) 373 kcal	2x quick rolls + plum jam (25g) 322 kcal	pancakes 459 kcal	2x vegan braided bread with jam (25g) 369 kcal
Snack	1 apple (ca. 150g) 78 kcal	crispbread + hummus 413 kcal	granola bar 190 kcal	spiced nuts 283 kcal	plant-based yogurt / quark alternative (150g) 128 kcal	crispbread + hummus 413 kcal	applesauce 144 kcal
Lunch	club sandwich 645 kcal	chicory and chestnut salad 576 kcal	veggie schnitzel sandwich 1002 kcal	veggie chicken salad + 2 quick rolls 535 kcal	Grisons barley soup + 1 vegan braided loaf 357 kcal	Tandoori sandwich 839 kcal	lettuce + 1 quick roll 441 kcal
Snack	apple pie 350 kcal	1 apple (ca. 150g) 78 kcal	1 apple (ca. 150g) 78 kcal	granola bar 190 kcal	2x vegan cookies 546 kcal	120g pear 70 kcal	rueblicake 333 kcal
Dinner	kale and apple salad + 1 vegan braided loaf 545 kcal	beet cutlets + 85g herb-flavored cottage cheese 610 kcal	apple and lentil salad 386 kcal	potato and halloumi patties + cole law 645 kcal	mushroom ragout with pastries 745 kcal	chestnut and lentil soup 167 kcal	kebab 669 kcal
Total energy	1,945 kcal	2,135 kcal	2,177 kcal	2,026 kcal	2,098 kcal	1,948 kcal	1,956 kcal

Fig. 1: Weekly plan from *Klimatopf* [22]

suit personal needs, as the specified portion sizes were sometimes too large for the self-test or the intervals between meals were too short.

- Preparing meals was time-consuming. One to two hours per day were spent preparing meals, with additional time spent shopping for ingredients. This meant that other leisure activities had to be reduced.
- Preparing meals was easy and straightforward with the help of the cookbook, but this assessment may also be due to the first author's already extensive cooking skills.
- There was social acceptance in the workplace, as microwaves and other equipment for bringing and reheating food were available.

Discussion

The study shows that a healthy and sustainable diet according to the PHD is fundamentally financially feasible for low-income households, in this case for citizens receiving welfare benefits in Germany and social assistance recipients in Switzerland. The price analysis conducted shows that the weekly expenses for such a diet are within the budget provided by the state. However, practical testing shows that financial feasibility alone is not

sufficient to implement a healthy and sustainable diet in everyday life. The factor of time in particular represents a barrier that is a relevant obstacle to the implementation of the PHD. Two other dimensions relevant to implementation, knowledge about nutrition and willingness to implement, were not explicitly surveyed in this study. In particular, the aspect of nutritional competence should be specifically analyzed in further studies in order to realistically assess the practical implementation of healthy and sustainable nutrition in low-income and other households.

Conclusion

The results of the study show that it is not a lack of financial resources that prevents people from adopting a healthy and sustainable diet, but rather a lack of prerequisites such as time and possibly knowledge and the will to implement it. Future studies should focus more on the necessary and available knowledge about healthy and sustainable nutrition, as well as take everyday practices and practical skills into account in order to identify levers for nutritional change where appropriate. This would enable the development of targeted measures that, within the framework of nutrition education, empower people to expand their knowledge, practices, and awareness of the need for a more sustainable and healthier diet, develop motivation for implementation, and plan their time resources in such a way that a desirable diet becomes possible.



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