

# One-size-fits-all Nutrition Strategies vs. Personalized Nutrition Interventions: A Cost-Effectiveness Analysis

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## BACKGROUND

The global challenge of non-communicable diseases resulting from inadequate nutrition is a complex and pressing issue that has far-reaching implications on public health, economies, and societies worldwide. Non-communicable diseases are chronic conditions that are not caused by infectious agents but rather by a combination of genetic, environmental, and behavioral factors. Inadequate nutrition plays a significant role in the development and exacerbation of these diseases.

Advantages that contribute to the cost-effectiveness of personalized nutrition interventions:	Challenges and Limitations:
Greater precision in targeting high-risk individuals	Lack of standardized definitions and criteria for personalized nutrition
Enhanced adherence due to tailored recommendations	Variability in data sources and modeling assumptions
Potential for long-term health benefits, reducing downstream costs	Limited long-term data on cost savings and health improvements

Critical analysis of a diverse body of literature on cost-effectiveness evaluations of personalized nutrition interventions.

## One-size-fits-all vs. Personalized Nutrition : Cost-Effectiveness

The purpose of this overview was to critically appraise the cost-effectiveness of interventions with a personalized nutrition component compared to one-size-fits-all strategies.

## OUR OBSERVATIONS

There is heterogeneity in the cost-effectiveness analyses methodology used in the personalized nutrition field, including disparities in definitions and conceptualization, PICO, and modeling approaches. **Despite variations in health economic outcomes, interventions with a personalized nutrition component tend to be more economical than one-size-fits-all strategies.**

## Recommendations for improving the cost-effectiveness evaluation of personalized nutrition interventions:

- Standardization of methodologies and reporting criteria.
- Long-term studies capturing sustained health and economic outcomes.
- Integration of psychological and biological factors for a comprehensive assessment

## TAKE HOME MESSAGES

Tailoring interventions to individuals needs enhances in adherence, potentially leading to sustained health improvements and long-term cost savings. Standardization of methodologies and incorporation of psychological and biological factors are recommended for comprehensive assessments. In conclusion, personalized nutrition interventions emerge as promising contenders for economically feasible solutions to combat diet-related diseases.

## REFERENCES:

1. Bhutta, Z.A.; Das, J.K.; Rizvi, A.; Gaffey, M.F.; Walker, N.; Horton, S.; Webb, P.; Lartey, A.; Black, R.E. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost. *Lancet* **2013**, *382*, 452-477. DOI:10.1016/S0140-6736(13)60996-4.
2. Clegg, M.E.; Williams, E.A. Optimizing nutrition in older people. *Maturitas* **2018**, *112*, 34-38. DOI:10.1016/j.maturitas.2018.04.001.
3. de Toro-Martin, J.; Arsenault, B.J.; Després, J.P.; Vohl, M.C. Precision Nutrition: A Review of Personalized Nutritional Approaches for the Prevention and Management of Metabolic Syndrome. *Nutrients* **2017**, *9*, 913. DOI:10.3390/nu9080913.
4. German, J.B.; Zivkovic, A.M.; Dallas, D.C.; Smilowitz, J.T. Nutrigenomics and personalized diets: What will they mean for food. *Annu Rev Food Sci Technol* **2011**, *2*, 97-123. DOI:10.1146/annurev.food.102308.124147.
5. Ghodsi, D.; Omidvar, N.; Nikooyeh, B.; Roustae, R.; Shakibazadeh, E.; Al-Jawaldeh, A. Effectiveness of Community Nutrition-Specific Interventions on Improving Malnutrition of Children under 5 Years of Age in the Eastern Mediterranean Region: A Systematic Review and Meta-Analysis. *Int J Environ Res Public Health* **2021**, *18*, 7844. DOI:10.3390/ijerph18157844.
6. Jinnette, R.; Narita, A.; Manning, B.; McNaughton, S.A.; Mathers, J.C.; Livingstone, K.M. Does Personalized Nutrition Advice Improve Dietary Intake in Healthy Adults? A Systematic Review of Randomized Controlled Trials. *Adv Nutr* **2021**, *12*, 657-669. DOI:10.1093/advances/nmaa144.
7. Kelly, J.T.; Law, L.; De Guzman, K.R.; Hickman, I.J.; Mayr, H.L.; Campbell, K.L.; Shoswell, C.L.; Erku, D. Cost-effectiveness of telehealth-delivered nutrition interventions: a systematic review of randomized controlled trials. *Nutr Rev* **2023**. DOI:10.1093/nutrit/nuad032.
8. Marcum, J.A. Nutrigenetics/Nutrigenomics, Personalized Nutrition, and Precision Healthcare. *Curr Nutr Rep* **2020**, *9*, 338-345. DOI:10.1007/s13668-020-00327-z.
9. Mathers, J.C. Paving the way to better population health through personalised nutrition. *EFSA J* **2019**, *17*, e170713. DOI:10.2903/j.efsa.2019.e170713.
10. American Society for Nutrition; The National Nutrition Research Roadmap. Available online: <https://nutrition.org/meetings/continuing-education/national-nutrition-research-roadmap-part-1/> (accessed on 16 June 2023)

