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Abstract

The Effectiveness of Specific Pieces of Advice in Personalized Nutrition—An Example from the German Food4Me Sub-Cohort †

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Abstract: Personalized Nutrition (PN) has shown that dietary changes can be facilitated by individualized approaches, even if the communication between experts and recipients is automized and based on algorithms, rather than personal contacts. However, little is known about to what extent recipients' behavior is affected by specific pieces of advice. In total, 220 healthy adults were recruited as the German sub-cohort of the Food4Me Proof-of-Principle study. They were randomly assigned to either the control group (n0 = 51) or to one out of six intervention groups receiving PN advice at various depths (3 levels) and frequencies (2 intensity groups). Depending on the depth of personalization, the dietary advice was based on information obtained from food frequency questionnaires (FFQs), anthropometry, biomarkers, or the analyses of five single nucleotide polymorphisms. Depending on the frequency of intervention, data were collected either three or five times within six months, and respective PN advice was given based on decision trees that identified three target nutrients and selected appropriate messages out of a set of approx. 550 predefined text modules. Messages were considered effective if subsequent FFQs showed dietary changes in line with the given PN advice. Results: The subjects received a total of 1228 target nutrient recommendations. Most frequently, the desired dietary changes were provoked by messages related to increased intakes of carbohydrates, as well as poly- and monounsaturated fatty acids (approx. 80%). But the advice to increase the intake of fiber or carotenoids was only put into practice in less than 60% of the cases. Multifactorial ANOVA revealed that significant changes ($p < 0.05$) were triggered by most of the target nutrient recommendations, e.g., for total fat, saturated as well as mono- or polyunsaturated fatty acids, carbohydrates, or dietary fiber. However, messages addressing the intake of omega-3 fatty acids, calcium or folate did not significantly contribute to respective dietary changes. Predefined pieces of PN advice are not equally effective. Further research is required to better understand how to optimize PN messages with respect to comprehensibility, feasibility, acceptability, and willingness to comply.

Keywords: personalized nutrition; dietary behavior change; Food4Me; effectiveness; communication

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