"Mon Alimentation Sur-Mesure", a tailored nutrition counselling web application based on mathematical diet optimization



Context:

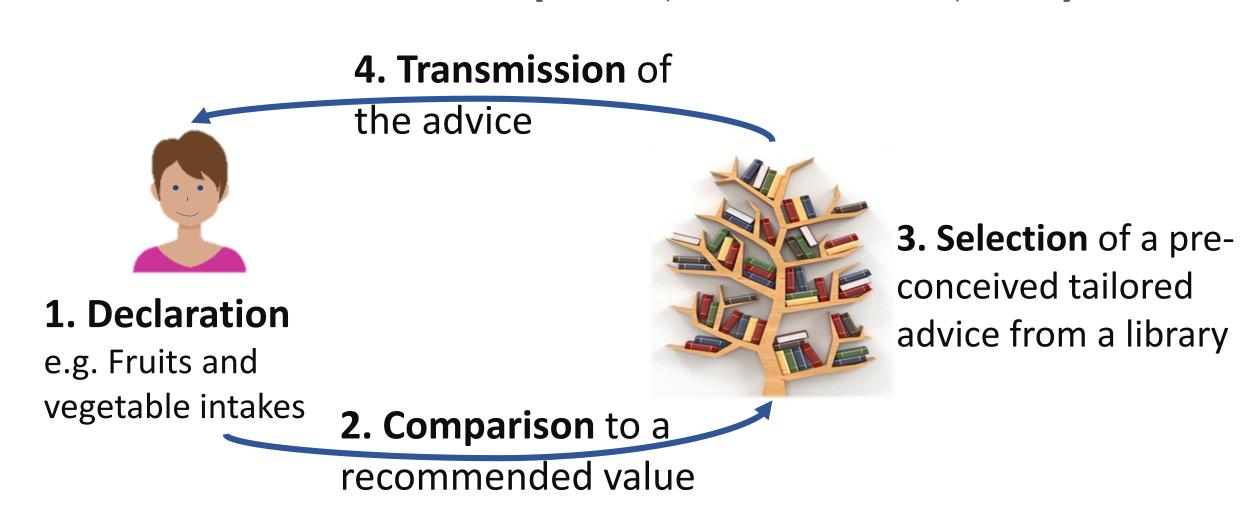
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Tailored approaches



"any combination of information or change strategies intended to reach one specific person, based on characteristics that are unique to that person [...] and have been derived from an individual assessment." [Kreuter, Ann Behav Med, 1999]



Tailored dietary behavior change interventions: small and significant effect on dietary behavior change, but usually target a few food groups or nutrients, without evaluating the overall diet

Individual diet optimization



The use of "linear programming to translate nutrient recommendations into realistic and individual-specific food choices." [Maillot, AJCN, 2010]

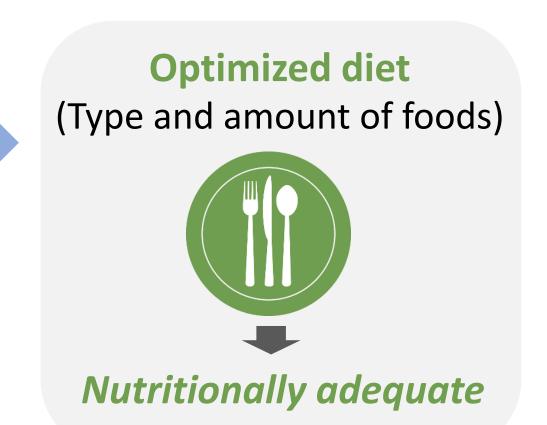


OPTIMIZATION

Objective: Minimize the deviation

from an observed diet

Constraints: Nutritional targets



→ Method increasingly used in the fields of public health and diet sustainability, but without testing the practicability of the optimized diets in real life

Objective:

The aim of this work was to combine tailored approaches and individual diet optimization in a web application of tailored nutrition counselling.

Method and result:



Development of "Mon Alimentation Sur-Mesure"

A web application to improve the nutritional quality of the whole diet of adults without major disease

Web application based on behavior change techniques (BCT) [Michie, Psych.&Health, 2011]



- Credible Source
- Techniques of binding communication



Self-monitoring of behavior

Functionalities of "Mon Alimentation Sur-Mesure"

Functionality 0: Creation of a personal account and login

Functionality 1: « My Profil »



Food frequency questionnaire [Gazan, Front Nutr, 2017]





All questionnaires are completed? If yes, allow the access to:

Functionality 2: « My current diet »

Food frequency questionnaire

- Overview of food consumption, diet cost, physical activity level



Energy and macronutrients intakes, dietary quality scores, vitamins and minerals intakes

- Overview of nutritional intakes

User action is required

Functionality 3: « My dietary advices »

Food frequency questionnaire Selection of foods to exclude (for food preferences, health reason, etc.)

Choice of a scenario¹

OPTIMIZATION

Incentive to substitute foods Tailored advices

Graded tasks

Exhaustive list of dietary changes (increase and decrease of foods, in portions) needed to reach nutritional adequacy

Selection of dietary advices that the user considers achievable

¹ Three diet optimization scenarios were implemented, adapted to different ways to change food consumption such as: "I prefer to improve the nutritional quality of my diet:

- Scenario 1: ...by privileging small variations on some foods that I already consume, and agreeing to consume new foods if necessary."
- Escenario 2: ...without changing the type of food I consume but favoring variations on the amount of these foods".
- Scenario 3: ...by changing the amounts of what I already eat, and adding new foods if necessary."

Conclusion:

Feedback on

Goal setting

dietary behavior

Using "Mon Alimentation Sur-Mesure", the user is actor to his/her dietary changes. The web application could be a future online health promotion tool:

- to help individuals to improve their diet,
- to serve as a decision-support tool for health professionals.

The evaluation of the tool is warranted before use in the field of health promotion.

Download:

