



Evolutionary Design: Using Silicon Valley Methodologies to Develop an Intervention for Weight-Loss Under Economic Constraints

Villalobos Daniel V,¹ Campos-Nonato I,^{2,3}

¹ University of California Berkeley
² Instituto Nacional de Salud Pública
³ Harvard University.

Contact: villa@berkeley.edu

Background:

The Tepoztlan lifestyle intervention (TLI) is an evidence-based intervention aimed to promote weight-loss in a low income, low education, rural population of central Mexico. It was designed using iterative design methodologies and behavioral sciences principles in order to develop a technology-assisted program for weight-loss maintenance. In addition to be evidence-based, scalability and dissemination constraints imposed by the hosting healthcare system were considered at the beginning of the design. We present here the iterative model used to develop dietary components of the intervention.

Objective:

To develop the dietary components of an intervention for patients with metabolic syndrome. The dietary goals were: controlling caloric consumption and dietary fat, fiber and salt intake.

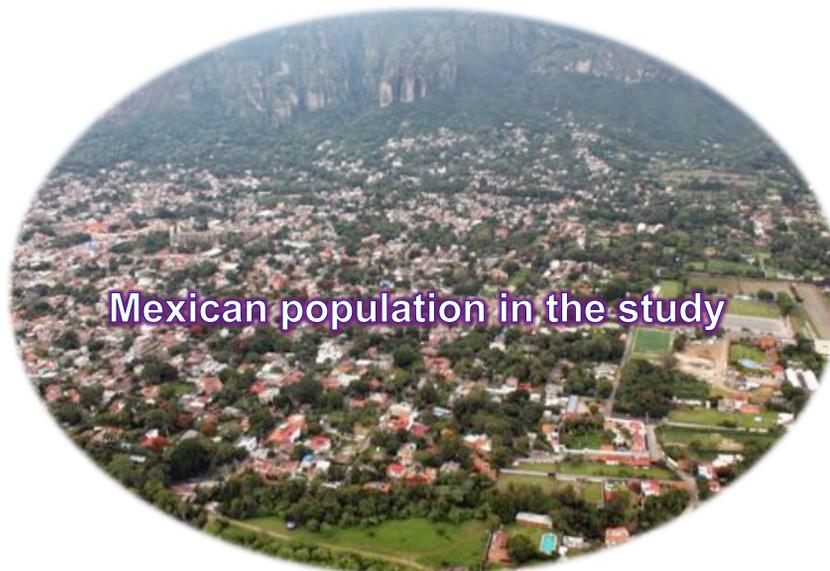
Methods:

The iterative design process had the following phases.

- Understand. A scientific review of literature was performed.
- Define. A design challenge was specified
- Ideate. An iterative phase of brainstorming, data collection and analysis allowed to create, modify and improve ideas and intervention concepts.
- Prototype. The building of early, low fidelity prototypes (paper, digital or analytical) of several intervention components was followed by higher fidelity, refinement phase.
- Test. Each prototype was evaluated with the purpose of answering defining questions regarding the intervention. The process of testing, redefining, re-ideating and re-building of prototypes was followed in an iterative manner, with specific parameters as guidance. Different prototypes were tested within the context and restrictions of the target population.



Defining a challenge in the lifestyle



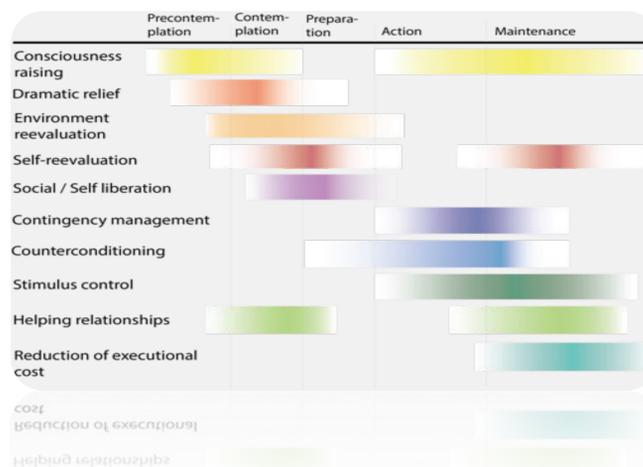
Mexican population in the study



Analysis of the environment for to create interventions.



Prototype. The building of early, low several intervention components was followed



Prototypes were tested within the restrictions of the target population

The intervention will be used behavioral strategies to promote behavior and lifestyle changes. These behavior strategies will be incorporated in the following intervention components: goal setting, feedback system, skill development, stimuli control, household social-support and peer-support. Findings will be made available to the County government, the state minister of health, the local clinic and academic circles.

Conclusions

The first feasible version of the evolutionary design was implemented in May 2015. The design includes basic medical and nutritional assessment, self-monitoring tools, seeking proactively social support, goal setting, commitment devices and remote assistance. The iterative process allowed to rule out a great number of assumptions and alternative ways of implementation that a priori looked promissory. The final design approached closer a true solution for the target population.