Nutrition Literacy e-tool to promote healthy food-choice habits

Clinical problem:

Poor dietary habits are considered to be a major preventable cause of premature death in the US and represent over 20% of total healthcare costs. Nutrition knowledge and food-choice skills play an important role in guiding dietary choice, but individuals often lack motivation to learn and use nutrition information because the process is too effortful.

Through a grant from the National Cancer Institute at NIH, we created a tool that effectively develops nutrition literacy skills which underlie healthy food choices (see link below). However, the tool was built in Qualtrics, which seriously limits growth potential of our approach. We plan to build the tool as an app and incorporate gamification features into its design to increase user motivation for prolonged use. The new *e-tool*, targeted for a wide range of users (junior high students through older adults, patient populations as well as healthy populations), will differ from existing 1) diet and health apps because it builds the users' knowledge and skills, and 2) existing nutrition interventions because it has wide reach and encourages repeated use over a few months. In this way, healthy choices become easier to make and, over time, transform into new habits. We seek a team of creative students to help us leverage the existing evidence-based tasks to create a gamified learning e-tool for use in junior high and high school health education classes, college-student wellness programs, healthcare clinics, corporate wellness programs, and other settings where users have an established relationship that support skill development over time.

One critical component of our approach will be to track performance from the e-tool (improvements in speed and accuracy of decision making and knowledge growth) and graphically display the learning data *together with* data imported from other sources that represent assessments of *food choice and health in the real world*. Sources include grocery store (through API data from loyalty cards) purchases, cafeteria (for employees or college students) purchases, other diet-health app data (MyFitnessPal), biometrics from medical devices (e.g., glucose monitor), and health portals (e.g., personal health records). Multiple sources of information serve to reinforce each other, creating a "motivational whole" that is bigger than the sum of the parts. There are no apps that focus on long-term dietary-choice skill development, nor are there any that combine skill development with objective measures of diet and health. The gamification features with multi-tracking visualization is a powerful and innovative way to tackle the problem of poor dietary habits and represents a paradigm shift in competitive world of health apps.

Desired outcome:

There is a great need to empower individuals to improve the quality of their diets. The desired outcome is a prototype that presents the evidence-based learning activities with basic gamification features (levels, badges), tracks progress from the e-tool, and graphically presents the learning data together with objective measures of health behaviors. Our plan is to use the prototype in pilot studies with stakeholders who have expressed strong interest in our tool (FDA Consumer Sciences, corporate wellness programs, women's and men's health interests, grocery stores, and registered dieticians from inpatient, outpatient, and independent settings) and obtain funding to continue to improve the e-tool based on user experience to enable us to scale up the project for wider use and larger impact.

Translational importance:

Adherence to a healthy diet can prevent, reduce, or delay the impact of a wide range of conditions (e.g., obesity, some forms of cancer, and cardiovascular diseases). Research is clear in showing that food choice is a multi-faceted and complex behavior that requires a wide range of activities and reinforcements to initiate behavior change and sustain healthy practices. Our low-cost, skill-based approach with engaging tasks and multi-tracking visualization has the potential for wide reach and large-scale changes in dietary choice, with large long-term payoffs in terms of reducing chronic conditions and premature death as well as healthcare costs.

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