

Demographics Specific Interfaces to Promote Healthy Snacking in Low SES Families

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Introduction Low socioeconomic status (SES) populations are at higher risk for acquiring chronic diseases. Among the major causes are individuals' everyday health-related decisions that affect their long-term health, in particular their dietary and physical activity habits. In this research, we designed a sociotechnical intervention to improve the healthiness of snacks in a low SES population. The 12-week field trial intervention had parents and teenagers from ten low SES families use a mobile phone snack monitoring application with non-gaming and gaming interfaces. The two interfaces were designed based on demographic needs assessments and theory-based design. This research will advance the field of biomedical informatics by providing concrete guidelines on designing mobile phone-based sociotechnical intervention for low SES populations to improve their snacking. Our research also highlights how sociotechnical interventions can potentially influence the health behaviors of low SES families.

Methods We recruited 20 participants from 10 low SES families – a parent and a teenage caregiver from each family that provides food to the family regularly. In a 12-week long field trial, 5 families used the mobile snack application for 4 weeks while the remaining 5 families were in the control group. We asked the participants to complete pre- and post-study photo-elicitation interviews (PEIs) where they took pictures of their food for one week. Eight 24-hour food recalls were administered to examine the difference in snacking behaviors of both groups.

Results The intervention group participants found the application beneficial and said that it made them aware about their eating habits, and educated them about alternative healthier snacks. Parents in particular appreciated the ability to monitor what their children were eating. The participants also mentioned that the application promoted healthier eating habits; they enthusiastically discussed the application with their friends and colleagues. The secondary caregivers were motivated by the game and enjoyed competing against the primary caregivers in their family. We identified patterns in our participants' application usage and the qualitative data showed potential for behavior change and long-term usage.

Discussion The demographic-specific interfaces encouraged the participants to consistently use the application, however they did not immediately improve their snacking habits. While the teenagers found the competitive nature of game engaging, we want to further examine how a cooperative game design would perform. The biomedical informatics community can use demographic-specific interfaces in developing personal health applications and patient portals that require long-term input by patients in different demographic groups. We suggest that using demographic-specific interfaces could reduce provider-patient communication barriers and present health information in a meaningful way, whereby patients, especially from low SES populations, could easily understand and take action on the information.

Funding This material is based upon work supported by the National Science Foundation under Grant No. (IIS-0846024).