Abstract

Background: Diabetes is a huge problem in India - 60 million people have it, while 1 million die from it each year. Mobile phone use is widespread in the country. Arogya World's mDiabetes program evaluated the impact of mobile text messages on self-reported diabetes awareness and prevention behaviors among cell phone consumers in India. To date, little applied research has been done on the impact of mobile health messages in India to prevent diabetes.

Methods: In this population-level public health program, Arogya World worked with Emory University to develop 56 mobile text messages about diabetes and prevention through healthy eating and increased physical activity. These free text messages were transmitted by Nokia in 12 languages, twice-a-week, to 1,052,633 Indian consumers who opted into the six month program. In the pretest, 982 Nokia subscribers (experimental group) and 943 non-Nokia subscribers (control group) were surveyed. After 6 months in the post intervention phase, 982 Nokia subscribers were surveyed from the Experimental group and 953 respondents from the Control population were surveyed. Pre-post analysis was conducted in two cohorts – Experimental (982 Nokia Life subscribers consumers with high interest in health issues and who opted to participate in the mDiabetes program) and Control (943 cell phone consumers in India that were not Nokia Life subscribers) to look at the self-reported impact of the text messages on diabetes awareness (i.e., causes and complications of diabetes, risk factors, and attitudes), and preventive behavior (physical activity, healthy eating).

Results: Awareness about complications of diabetes increased from 34% to 59% (25%) in the experimental group, while the control group showed an increase from 44% to 55% (11%). Post-intervention analysis also indicated an increase (11%) in daily exercise in the experimental cohort from 50% to 61% while the control group showed no change. Respondents taking 2-3 servings of fruit a day increased from 34% to 49% (15%), while the control group increased from 34% to 59% (25%) in the experimental group, while the control group remained at 32% and 31%, respectively. There was an 8% increase in the intake of 2-3 servings of vegetables a day in the experimental cohort (from 50% to 58%), while the control group remained at 53% at the pre and post phases.

Conclusion: Exposure to mobile text messages may hold promise for influencing healthy lifestyle change for mobile phone users in India. Ongoing analyses from the data collected pre and post intervention will provide more insights into behavior change and/or intent to change. Future studies are needed to validate self-report data, explore over time the impact of continued message use and to better understand the frequency of messages needed to impact maximal change in cell phone users.

Design

A total of 1,052,633 mDiabetes consumers participated across rural and urban India. Fifty-six text messages were sent to each mDiabetes consumer in English, Hindi, or one of 10 other languages. In the first 6 days, 1 message per day was sent. In weeks 2-6, 2 messages per week were sent. The research study involved pre- vs. Post-evaluation in experimental and control cohorts (experimental respondents were those that received the messages, while ~70% was longitudinal and we still had to reach 300 respondents who were not surveyed in the pre-phase).

Response rate after 26 weeks was:

- Experimental: 86% of consumers were the same in pre and post phases
- Control: 69% of consumers were the same in pre and post phases

CAVEATS:

- Experimental Cohort was a select population of Nokia Life consumers who opted into the mDiabetes program and therefore had greater adherence to the program.
- Control Cohort was a random selection of mobile users (who were not Nokia phone users).

Footnote: When recall surveys were being conducted, India was in the midst of the Covid-19 pandemic and, until the present time, many respondents’ homes had no electricity, which increased the burden on those respondents who had no electricity.

Summary and Conclusions

- mDiabetes reached consumers from all over India, and impacted people in both rural and urban areas.
- Exposure to mobile text messages may hold promise for influencing healthy lifestyle change for mobile phone users in India.
- Because of its scalability, mDiabetes holds promise as the basis for a chronic disease prevention model.
- Future studies are needed to validate self-report data, explore over time the impact of continued message use and to better understand the frequency of messages needed to maximally impact change in cell phone users.
- This model can be replicated for other non-communicable disease areas where mobile messaging can lead to measurable changes in behavior. This can potentially change the disease landscape at a country level.