



# Multimedia Breast Cancer Education Kiosks for Latinas

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## Abbreviated Abstract

Delivering breast cancer screening messages to low income, low literacy Latinas presents unique challenges. Interactive multimedia technologies may offer an innovative, effective, and cost accessible medium for reaching this population. The specific aims of this Phase II SBIR research were to: (1) design culturally, linguistically, and age appropriate breast cancer education models for low education, low literacy Latinas using the message development model validated in Phase I; (2) design and develop prototype kiosks that employ touchscreen and CD ROM technologies into a device that enables users to easily navigate and control the direction and pace at which they obtain information; and (3) field test the interactive multi media kiosks to determine their efficacy in providing breast cancer screening information to Latinas. A pre/post design determined message effect knowledge gain, attitudinal change, self efficacy, and behavioral intent on 1600 Latina users of multi media kiosks. Three hundred of these randomly assigned women were interviewed 4 months after exposure to determine behavioral change. Site assistants conducted pre-and post-interviews; the kiosks provided tracking data on use patterns for each information module. There were considerable opportunities for technological innovation making use of multimedia kiosks for health education.

## Primary Investigator

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Armando Valdez earned his doctorate in Communication Research at Stanford University in 1978. He subsequently taught at various California Universities for a period of 10 years. As an academic, his research interests and publications focused on the impact of emerging telecommunications technology on society, and related issues of access and equity. In 1990, he left academic life to establish a social marketing research firm devoted to designing and implementing community education campaigns and health promotion interventions targeted at low-income minority and other hard-to-reach populations. For the past decade, Dr. Valdez has focused on developing a viable model for reaching low-income, less-educated communities, with information about drug abuse prevention, foster care, and cancer education.

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## Research Team & Affiliations

Dr. Armando Valdez, Principal Investigator;

Dr. Lynn Ackerson, Division of Research, Kaiser Permanente Medical Care Program; Department of Epidemiology and Biostatistics at the University of California-San Francisco.

Dr. Roshon Bastani, Associate Dean for Research, UCLA School of Public Health;

Dr. Maria E. Fernandez, Director of the Office for Diversity, School of Public Health, University of Texas Health Science Center-Houston;

Dr. Regina Otero-Sabogal, University of California at San Francisco;

Dr. Carol Somkin, Division of Research, Kaiser Permanente at Oakland, California.

## Total Budget

\$750,000.00

## Research Objectives

Aim 1: design breast cancer education messages for low-education, low-literacy Latinas that are culturally, linguistically and age-appropriate using a message-design and content-development model validated in the Phase I research,

Aim 2: produce and acquire appropriate media content for use in interactive, multimedia kiosks to provide breast cancer screening and early detection information to low-education, low-literacy Latinas,

Aim 3: design and develop a prototype kiosk that employs touchscreen and CD-ROM technologies to optimize the visual, audio, and interactive features inherent to this medium into a device that enables users to control the path and pace at which they obtain breast cancer screening and early detection information,

Aim 4: conduct a field test to determine the efficacy of the interactive multimedia kiosks in providing breast cancer screening and early detection information to low-education, low-literacy Latinas in clinical and community settings.

## Theory/Hypothesis

The theoretical framework for the study was based on Social Cognitive Theory using self-efficacy construct.

## Experimental Design

The study employed a randomized parallel group design with two groups, an intervention group and a control group with delayed exposure to the intervention.

## Final Sample Size & Study Demographics

A sample of 1197 women participated in the study. The majority of study participants were under 65 years of age, foreign-born with less than eight years of education and a weekly household income below \$350.00, the lowest income quartile for Latinos in 1998.



## Data Collection Methods

Study participants were randomly assigned to either a pre-exposure or post-exposure condition within each of six field sites. Data collection interviews were conducted in either English or Spanish, depending on the participant's language preference. The intervention group was interviewed after they had viewed the breast cancer modules. The control group served as the baseline condition and was interviewed prior to their exposure to the intervention. Study participants were interviewed only once, rather than twice for administration of a pre- and a post-test, which precluded a learning effect. Approximately 49% (583) of the participants were assigned to the pre-exposure group while the remaining 614 participants were assigned to the post-exposure group across all six sites. A program running in the background tracked the number of modules viewed by each study participant.

## Outcome Measures

The outcome measures of the study were (1) knowledge gained, (2) attitude change, (3) change in behavioral disposition, and (4) adoption of screening behavior.

## Evaluation Methods

Pre- and post-tests were conducted. Participants were randomly assigned to a control or intervention condition. The control group was interviewed about their breast cancer knowledge, attitude and mammography intentions prior to exposure to the intervention, and served as the baseline group. The intervention group was interviewed about those same factors after exposure to the intervention.

## Research Results

Women in the intervention group exhibited higher knowledge scores than the pretest group (Chi sq.,  $p < .0001$ ). Never-screened women exhibited the largest differences in knowledge scores relative to the baseline sample. The intervention also increased the likelihood of women seeking information about a mammogram. The research also found that significantly more non-adherent women in the intervention group obtained mammograms after exposure to the intervention. The effect size for receipt of mammograms was 51%.

## Barriers & Solutions

## Product(s) Developed from This Research

Interactive Multimedia Breast Cancer Education Kiosk