

Community Level Cancer Control in a Texas Barrio: Part II—Base-line and Preliminary Outcome Findings

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In a quasiexperimental demonstration study, screening rates for breast and cervical cancers were measured among Mexican-American women in selected areas of San Antonio and Houston, Tex. This research was primarily designed to evaluate a cancer-screening promotion program in San Antonio by comparing changes in screening rates in panels from the two barrio communities. In a base-line population survey, we found a small, but significant, proportion of women (10%-15%) lacking Pap smears and a larger proportion (30%-40%) lacking mammography. In a panel study following women who lacked screening at base line, there was a trend toward greater Pap smear use among younger women and a significant increase in mammography for all age groups in San Antonio compared with groups in Houston. Although there was a difference in language use between the communities, rates of newly initiated screening within the communities were similar among monolingual Spanish speakers and among those who used English, supporting the hypothesis that the program increased both groups' participation in breast-cancer screening. [Monogr Natl Cancer Inst 18:123-126, 1995]

This report presents methods and results from the quasiexperimental panel study that was designed to evaluate the theory-based communication program to promote participation in cancer screening among women in the barrio of San Antonio described in (1). The study was implemented in selected census tracts in two urban communities, one receiving the program (San Antonio) and the other serving as a reference (Houston). Base-line measurements were taken in 1991 and a follow-up panel study was conducted in 1994 with women who reported inadequate cancer screening at base line. The panel design was selected as the best choice for a quasiexperimental study with noncomparable groups (2). Although individual-level random assignment is the preferred method from a statistical point of view, it is not appropriate for evaluation of community-level programs, such as those implemented by Ramirez and McAlister (3). The community-level, quasiexperimental research design has been widely employed in published studies of other areas of disease control, particularly in studies of smoking cessation (4). While results must be interpreted carefully, this research design can yield useful evidence about the potential effectiveness of community-level, behavior-change campaigns (5-7). The panel design, with repeated measures of individuals, is the most efficient choice for assessing experimental effects in comparisons between whole units not randomly assigned to treatment or control conditions (2). It is influ-

enced by treatment-measurement interaction, but canvassing with brief interviews can be considered as part of the treatment itself. In a study of smoking cessation patterned after the study by Meyer et al. (8), a quasiexperimental panel design yielded evidence of program effects on verified rates of smoking cessation in a Mexican border city in Texas (9). The present research employs that design to evaluate program effects on cancer-screening participation in an urban barrio in Texas.

Although there have been some interesting case studies (10,11), results from a community-level demonstration study employing a community-level, quasiexperimental design have not been reported in the literature on action to promote screening among Mexican-American women. Some promising experimental results have been reported in other populations (12). While a major issue determining screening is its reimbursement (13), it is also necessary to promote the services across cultural barriers. To learn how this can be effectively accomplished, controlled experiments must be carried out in community settings. This report presents the base-line and preliminary outcome findings from a community-level, quasi-experimental, panel study of the effects of screening promotion.

Methods

The 1980 census found that 44,722 persons lived in the six selected census tracts located on San Antonio's west side. Data from the 1990 census were not yet available when the study was conducted. According to the 1980 census, 53% were women, 8750 of whom were over the age of 40. The median age of these women was 25.6 years, the median household income was \$8061, and 86% of the residents spoke Spanish. The selected area was composed of 703 residential blocks, of which 336 were selected to participate in the enumeration phase. A total of 1576 residences were subsequently selected from these residential blocks for the personal enu-

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See "Note" section following "References."

meration interview. In the control site of Houston, 41,562 persons lived in the seven selected census tracts located in the Navigation area. Forty-eight percent of the residents were women, of whom 5686 were estimated to be over the age of 40. According to the 1980 census, the median age was 24.2 years, the median household income was \$12,134, and 80% of the residents spoke Spanish. Of the 703 residential blocks that constituted the defined control site, 430 were chosen in the enumeration phase. A total of 1482 households were selected by a computer program for the personal enumeration interview.

Eligible survey participants were selected with the use of a multistage sampling procedure. First, areas composed of adjacent census tracts in Houston and San Antonio were selected and matched according to the proportion of residents who indicated Hispanic ethnicity in the 1980 census. Second, within each selected census tract area, a computer program selected residential blocks from census records fed to a computer program. Third, the selected residential blocks were visually inspected by the field supervisor, who recorded each address manually onto a preprinted map. Fourth, a computer program systematically selected every third residence, identifying those households eligible for enumeration. Fifth, personal enumeration interviews were conducted to determine whether the residence was in fact inhabited and whether the inhabitants were of Mexican-American origin, establishing their gender and age. Only one Mexican-American woman 18 years or older per household was eligible to participate in the base-line interview. If only one woman was available, she was selected for the interview. If more than one woman was eligible, an algorithm was used that selected the person with a birthday most recent to the date of interview.

The survey was designed to be administered as a personal interview conducted either in English or in Spanish at the residence of the respondent. Twenty bilingual and bicultural interviewers were recruited from the community and attended a 3-day training workshop, after which they went into the field. The workshop included role playing, skills for contacting respondents, the interview protocol, and response-coding practice. In addition, interviewers received a manual of operations and met with the on-site project manager on a regular basis.

Data collection began in October 1991 and ended in May 1992. Data were collected for a total of 1804 Mexican-American women in face-to-face interviews lasting between 40 and 90 minutes, depending on whether the food-frequency module survey was included. Before the interview started, a consent form that stressed confidentiality, voluntary participation, and the significance of the project was read and signed by the participant. Respondents were paid \$10 by mail for completing the interview.

Items included in the Women's Health Survey were pooled from existing questionnaires that had been previously implemented with Hispanic- and/or Spanish-speaking populations. Identical items were being used concurrently in a study in El Paso, and were pretested in San Antonio. The

follow-up panel interview administered to women consenting to participate in the panel study consisted of questions addressing perceived health, general health, cervical and breast cancer screening, attitudes and norms associated with both cancer-screening procedures, social support, cancer awareness, media exposure, and tobacco and alcohol use. These questions had been included in the base-line survey and did not undergo any major modifications. The questionnaire took 15-20 minutes to complete over the phone. Respondents were read an informed-consent statement. If they completed the interview, they were paid \$10 by mail.

The panel study was carried out during the spring and summer of 1994. Selection of the panel-study participants was based on self-reports of compliance with the National Cancer Institute's cancer-screening guidelines, provided in the base-line interview survey. Basically, a case was selected according to three criteria: age of the respondent, reported mammogram, and Pap-smear screening. Of the 1804 women who participated in the base-line survey, 683 cases were identified as eligible to participate following these criteria: 1) Women younger than 40 years of age were selected if they had never had a Pap smear or had not completed a Pap smear in the 2 years prior to the interview; 2) women older than 40 years of age were selected if they had never had a Pap smear or had not completed a Pap smear in the 2 years prior to the interview; and 3) women older than 40 years of age were selected if they had never had a mammogram or had not completed a mammogram in the 2 years prior to the interview. Women older than 40 years of age did not have to meet the two cancer-screening compliance criteria (Pap smear and mammogram screening) to be selected for the panel study. If they did not comply with one of the two cancer-screening procedures, they were selected for the interview. Women younger than 40 years were selected only if they had not complied with Pap-smear screening recommendations, as indicated in number one above. Seventy-six percent of the cases selected with the algorithm ($n = 612$) had a telephone number listed in the database. Of this total, there was a further decrease in the number of potential respondents who could be reached because the phones were disconnected, sometimes with the number assigned to a new person, or the person had moved away without leaving a new phone number. Because the phone was disconnected or the respondent no longer lived at that household, 215 cases were eliminated from the list. Among the 397 potential respondents we identified, a minimum of five interview attempts were made. The total number of interviews completed for this panel study was 309, with a response rate of 78%. In Houston, there were 187 cases available for interviewing, and 150 were completed (80%). In San Antonio, there were 203 cases available for interview, and 159 were completed (78.3%).

Results and Discussion

Some characteristics of the two base-line study samples are shown in Table 1. The two samples are quite different in several ways. In Houston, there were approximately twice as many participants who were born in Mexico and who iden-

Table 1. Cultural characteristics of study samples

	San Antonio	Houston	Chi-square	P
No. of subjects	892	906		
Ethnic self-identification				
Mexican (versus Mexican-American, Hispanic, other)	31.2	58.4	135	<.0001
Fewer than 7 years' education	33.5	49.3	46	<.0001
Born in Mexico	31.0	63.0	186	<.0001
Interviewed in Spanish	39.8	68.5	150	<.0001

tified themselves as Mexican rather than as Mexican-American. Compared with those in Houston, women in San Antonio were twice as likely to use English in the interview. These findings of noncomparability showed a greater difference between the two barrios than was anticipated from the 1980 census data, and they contributed to our decision to use a panel study for program evaluation. The differences probably reflect important aspects of the two communities. San Antonio was founded by Spanish-speaking peoples over 300 years ago and, despite some turmoil in the past century and a half, it now has a well-established Mexican-American population that has gained considerable dominance over the affairs of the city as a whole and is now the electoral majority. Although there are many recent immigrants from Mexico in the barrio, it is primarily a second, third, or much older population with a long history of exposure to the English-language culture. Houston was founded after the period of Spanish dominance of Texas, and its barrio is a modern development populated by many recent immigrants, especially in the past 10-20 years.

The primary variables of interest for this study are rates of participation in screening to detect female reproductive cancer: Pap smear and mammography. We found four main

types of participation deficiency, with some overlap between certain categories. Some women had never had one or both examinations, and others had not been re-examined in more than 2 years. The proportions in these categories are shown in Table 2. Women are grouped by numbers above and below 40 years of age because that was the consensus age for mammography recommendations at the time the study began. The data show that, despite the differences in community characteristics, the two study groups were comparable with regard to the primary-study outcome. These findings mirror results of other surveys of Hispanic women in Texas, showing a significant subgroup that lacks even the basic preventive care provided by a Pap smear. Lack of mammography was much more common, mainly reflecting its cost and newness.

Most of the respondents who participated in the panel-study phone survey were older than 40 years of age (82.4%) and from San Antonio (54.9%). Most respondents were primarily Spanish speakers, as indicated by the language chosen to complete the interview (73.6%). The primary outcome of interest for the panel study was the rate at which women obtained Pap smears and mammograms. These were the same women whose reported lack of screening is presented in Table 2. Rates of Pap smear and mammography are shown in Fig. 1. Over the approximate 2-year interval that the panel was followed, 111 women reported having a Pap smear and 70 women reported having a mammogram. For Pap smears, there was no overall difference in the percentage of women in San Antonio or Houston who obtained the examination (45%-48%). Among women under the age of 40 who had never had a Pap smear or who had not had one in the past 2 years (n = 68), more panel respondents reported having a Pap smear in San Antonio (67%) than in Houston (40%). However, because of the small sample size, this difference was only at the borderline of significance ($X^2 = 3.4$; $df = 1$; $P = .065$). For women in the panel in San An-

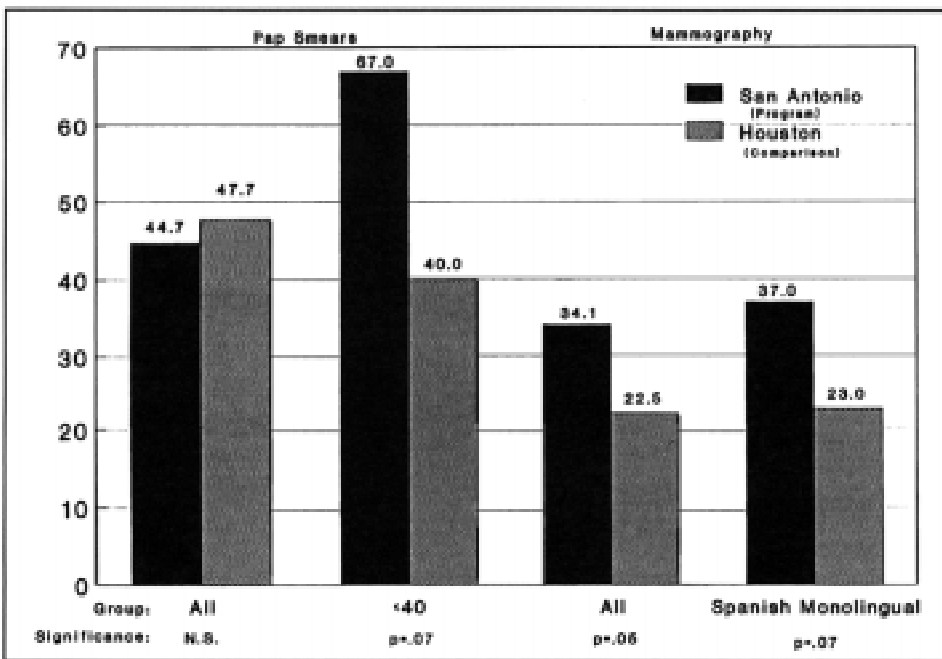


Fig. 1 Percentage of panel participants receiving examinations by city and type.

Table 2. Proportions of women lacking screening by type, age, and city

	San Antonio*	Houston*
Women aged ≤ 40 y who had never received a Pap smear or had not received one within 2 years	.15 (405)	.15 (434)
Women aged ≥ 40 y who had never received a Pap smear	.09 (493)	.10 (474)
Women aged ≤ 40 y who had never received a mammogram or had not received one within 2 years	.39 (493)	.37 (474)
Women aged ≥ 40 y who had never received a mammogram	.31 (493)	.30 (474)

*Values in parentheses = No. of subjects.

tonio, the proportion of respondents who reported having a mammogram (34.1%) was significantly greater ($X^2 = 4.0$; $d.f. = 1$; $P = .045$) than that in Houston (22.5%). For women over the age of 50, for whom mammography was most consistently recommended during the intervention period, a similar difference was observed that, because of the smaller sample size, was not statistically significant. These results do not support the hypothesis that a program-treatment effect was present with respect to obtaining Pap smears, but they are consistent with the hypothesized program impact on mammography. Although trends were in the hypothesized direction, differences in mammography rates were not significantly different within age subgroups, e.g., ≥ 50 years of age. This is primarily because of small sample sizes for the subgroups. Consensus on recommended ages for mammography screening changed after the first year of the study, and the program recommendations were revised accordingly. However, the sampling design did not anticipate this shift in objectives, and the community itself may have been confused by the revision. Because women under the age of 40 are recommended to obtain mammograms if they have a family history of breast cancer, the program displayed role models promoting the services for younger age groups. This makes the entire panel group a good indicator of the program's overall effect.

Because the Houston sample included more Mexican- and Spanish-speaking women, it is possible that the difference in mammography rates was due to an underlying tendency for these women not to receive the screening examinations. To determine whether the difference in mammography rates might be due to this base-line difference between groups, separate analyses were conducted for the two language groups. For monolingual Spanish speakers, Pap smear rates again showed no significant differences between the program and comparison groups, but there was a nonsignificant trend ($X^2 = 3.2$; $d.f. = 1$; $P < .074$) toward higher rates of mammography in the San Antonio (program) panel (37%; $n = 65$) than in the Houston comparison group (23%; $n = 81$). This trend indicates that the overall difference in rates could not be due to the base-line noncomparability of groups with respect to language use.

There are several explanations that might account for the evidence of a treatment effect only for mammograms. In

both Houston and San Antonio, new services offered mammograms at lower costs, and there was much national and regional publicity about the examination and its merit. This may have combined with the local program activities to produce the effect on mammography rates. For Pap smears, no new initiatives were offered to lower already low costs or increase already good availability. This may have prevented the program activities from having much effect on Pap smear rates. Another possibility is that the program had more effect on mammography because there were simply more women in need of the examination, which was relatively new to some women in the community. The difference in effects may be understood in terms of the differences between midterm and late adopters of a health innovation (14). The kind of program that was organized in San Antonio might have been appropriate for the early and midterm adopters who were just beginning to use mammography services, but not for the women who still avoided or missed Pap smears. These latter women may be characterized as late adopters and thus may be less amenable to community-level programs. In our subsequent research, we are investigating whether more intensive personal contact will have measurable effects on Pap-smear rates among women who have never had that examination.

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Note

M.-E. Fernandez-Esquer and A. L. McAlister shared equally in the writing of this report; A. L. McAlister and A. G. Ramirez were the principal and co-principal investigators; F. Trevino and L. Pulley were responsible for the base-line surveys; M.-E. Fernandez-Esquer conducted the panel study with assistance from I. Torres; and R. Villarreal, S. Hu, and Q. Zhang assisted in the management and analysis of data.