Despite the growing success of organ transplant as the primary treatment for end-stage organ failure, levels of consent for organ donations continue to be low, and the gap between the demand for and supply of organs continues to widen. The organ shortage is even more pronounced in minority populations, who account for only 31% of donors but represent 55% of those on the waiting list.1

Among US minority populations, the Hispanic American community is the fastest growing. Hispanic Americans are projected to constitute one-quarter of the country’s population by the end of 2050.2 As expected, this population growth parallels a growth in transplant need in the Hispanic American community, with a 260% increase of Hispanic Americans on organ waiting lists compared with a 146% increase among non-Hispanic groups.3 Despite this heightened need for organ donation, Hispanic Americans are 60% less likely to donate organs compared with non-Hispanic whites.3

As part of an ongoing effort to increase organ donation among Hispanic Americans, our research team implemented educational programs in several communities that had a large Hispanic American population in Los Angeles County. These interventions included media campaigns4,5 and educational programs at select high schools6 and churches.7 To assess the lasting effect of these programs over time, telephone surveys were performed approximately 2 years after implementation of the first program. The objective of the present study was to determine whether the outreach programs had an effect on improving intent to donate organs in the Hispanic American population.
Methods

This research is one of several components of an ongoing project intended to increase organ donation rates in Los Angeles County sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases. This study was approved by the institutional review board of Cedars-Sinai Medical Center, and informed consent was obtained from the participants.

Target Neighborhoods

Four Southern California neighborhoods with high percentages of Hispanic Americans in close proximity to a major metropolitan level I trauma center that provides most medical care to the area were identified using US Census data. The target neighborhoods were identified by zip code. Three of the neighborhoods were study communities where the interventions were implemented, and the fourth neighborhood served as the control community with no interventions.

Organ Donation Media Campaign

The organ donation media campaign used a variety of media, including television commercials, radio advertisements, and a float in the annual Tournament of Roses Parade in the neighboring city of Pasadena. The media campaign was launched in December 2008 with paid television and radio segments (30 to 60 seconds long) that aired on major Los Angeles Spanish-language broadcasting stations. The commercials and advertisements addressed culturally sensitive issues focused on organ donation in the Hispanic community and were presented in English and Spanish.

The media campaign ended on January 1, 2009, with coverage of the Tournament of Roses Parade. The Donate Life Rose Parade Float, honoring prior donors and decorated by volunteers, was a major focus of the media coverage on local newscasts and talk shows. This campaign cycle was repeated in December 2009, culminating in the Tournament of Roses Parade on January 1, 2010.

High School Educational Program

Five high schools from the study neighborhoods were selected. The Bridging Lives intervention was a 45-minute culturally sensitive educational program created specifically for high school students. The presentation included information about the need for organ and tissue grafts for transplant and how the organ donation and allocation process serves this critical social need. Each presentation was supervised by a dedicated youth education coordinator. The educational program was presented in assemblies throughout the week to all students in the 5 high schools. This intervention occurred from April 1 through May 30, 2009.

Church Educational Program

Four Catholic churches in the study neighborhoods were chosen to receive the educational intervention. The program was administered by OneLegacy (http://onelegacy.org/site/index.html), the local organ procurement organization. A 45- to 60-minute presentation in English and Spanish was created specifically for religious organizations. The presentation provided factual information about the need for organ and tissue grafts for transplant and how the organ donation and allocation process serves this critical social need. Religious misconceptions regarding organ donation were discussed. This intervention occurred from March 1 through May 30, 2010.

Survey Instrument and Administration

A preintervention survey was conducted in October 2008 (wave 1) before the start of the original media campaign. A second survey was performed in January through February 2009 (wave 2) to assess the effect of the media campaign. The last survey was performed in October 2010 (wave 3) to examine the impact of the media campaigns and educational programs. As in the previous surveys, the current surveys required 3 weeks to complete and were conducted by telephone by professionally trained interviewers. The interviewers were not medical personnel but individuals with extensive experience in performing telephone and door-to-door surveys. The survey instrument was designed with a focus to assess the awareness and perceptions of organ donation and the intent to become organ donors.

Respondents were drawn randomly from lists of Hispanic surnames in the 4 target zip codes. Lists of telephone numbers were purchased from a number registry. Numbers were then assigned to a calling center by computer randomization. Respondents were qualified as self-identified Hispanic Americans, 18 years or older, who claimed to be a head of household. The sample included foreign- and US-born Hispanic Americans with varying levels of acculturation. Multiple points of termination applied for participants who did not fit the study requirements. Data were collected and coded by technicians blinded to the purpose of this study. For wave 1, a total of 520 participants were surveyed, with 130 participants from each of the 4 neighborhoods defined by zip codes. Three of the neighborhoods where the high school and church interventions were implemented were designated experimental; 1 neighborhood where none of the interventions were implemented served as the control. For wave 3, a total of 842 participants were surveyed with the intent to include 390 participants from the 3 experimental neighborhoods and 390 participants from the control neighborhood. The increase in the number of participants surveyed in the control neighborhood in wave 3 was intended to increase the power in the study to compare the outcomes between experimental and control neighborhoods.

The survey began with 6 demographic questions designed to confirm that the respondents (1) lived in the target neighborhoods (defined by zip codes), (2) were Hispanic American, and (3) were 18 years or older. The survey included 21 questions targeting the participant’s thoughts about organ donation. Questions were asked to ascertain the person’s awareness, beliefs, and attitudes about organ donation. Most questions were multiple choice, but some were open-ended. After answering the questions about organ donation, the participant was then asked to provide basic demographic information. This information included 13 questions about educational level, income, religion, employment, and other demographic data. Table 1 lists demographic and cultural factors and the outcome measures for the study.
Increasing Organ Donation in Hispanic Americans

Table 1. Independent Factors and Questions Used Within Each Outcome Domain

<table>
<thead>
<tr>
<th>Domain</th>
<th>Independent Factor</th>
<th>Outcome Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic</td>
<td>Age</td>
<td>1. How familiar are you with organ donation?</td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td>2. In the past year have you read, seen, or heard any information about organ donation?</td>
</tr>
<tr>
<td></td>
<td>Educational level</td>
<td>3. Were you aware that you can sign up to become an organ donor when you register for your driver’s license?</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>4. You must have a driver’s license in order to be an organ donor. (false)</td>
</tr>
<tr>
<td></td>
<td>Income</td>
<td>5. Organ donation can help people in need gain additional years of life. (true)</td>
</tr>
<tr>
<td></td>
<td>Children &lt; 18 y currently in household</td>
<td>6. It is a social responsibility to donate organs. (true)</td>
</tr>
<tr>
<td>Cultural</td>
<td>Acculturation</td>
<td>7. You are not willing to donate organs to a stranger.</td>
</tr>
<tr>
<td></td>
<td>Language spoken at home</td>
<td>8. Compared to other people, Hispanics are more likely to need organ transplants. (true)</td>
</tr>
<tr>
<td></td>
<td>Respondent US born</td>
<td>9. Compared to the average person, wealthy people are more likely to receive an organ transplant. (false)</td>
</tr>
<tr>
<td></td>
<td>Father US born</td>
<td>10. If you agree to be an organ donor, the doctor may not try to save your life. (false)</td>
</tr>
<tr>
<td></td>
<td>Mother US born</td>
<td>11. Removal of organs would increase your family hospital costs. (false)</td>
</tr>
<tr>
<td></td>
<td>Religious belief</td>
<td>12. Removal of organs would disfigure the body and affect the funeral arrangements. (false)</td>
</tr>
<tr>
<td></td>
<td>Discussion of organ donation with family</td>
<td>13. It is cruel to have one’s body cut up after death. (false)</td>
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<tr>
<td></td>
<td></td>
<td>14. There is always a chance that a person who is brain-dead will survive. (false)</td>
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<tr>
<td></td>
<td></td>
<td>15. When you die, your family would support your decision to be an organ donor.</td>
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<tr>
<td></td>
<td></td>
<td>Final outcome</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16. How likely are you to register to become an organ donor?</td>
</tr>
</tbody>
</table>

Results

Wave 1 (preintervention) initially included 524 participants. We excluded 122 participants owing to missing information on educational level (n = 9), preexisting donor registration (n = 110), or a combination of both (n = 3). A total of 402 participants from the wave 1 group underwent analysis. Wave 3 (postintervention) initially included 842 participants. After exclusions (missing information on educational level [n = 6]; preexisting donor registration [n = 182]), 654 participants constituted the wave 3 analysis group.

Nearly 97% of the wave 3 participants had read, seen, or heard information about organ donation in the past year. Overall, 53.2% of the participants were aware of any one aspect of the campaign elements. With respect to the media campaign, 42.2% were aware of the Tournament of Roses Parade float, whereas 16.9% were aware of the television and radio advertisements. Only 18.3% and 12.6% of the participants were aware of the high school and church programs, respectively.

Comparisons of the demographic and cultural characteristics between waves 1 and 3 are presented in Table 2. Age, sex, the number of households with children younger than 18 years, and the Catholic religion were significantly different between the 2 groups.
Comparisons of the outcome measures between the 2 surveys are given in Table 3. Of the 16 outcome questions, the following 5 demonstrated responses that were significantly different between waves (P < .05):

1. “In the past year have you read, seen, or heard any information about organ donation?”
2. “Organ donation can help people in need gain additional years of life.”
3. “Compared to the average person, wealthy people are more likely to receive an organ transplant.”
4. “Removal of organs would disfigure the body and affect the funeral arrangements.”
5. “How likely are you to register to become an organ donor?”

After controlling for the 4 significant demographic and cultural factors from the univariate analysis, significant differences were noted from wave 1 to wave 3 (Table 4). Significantly more respondents in wave 3 believed that organ donation helped people in need to gain additional years of life (90.9% vs 84.7%; AOR, 1.99 [95% CI, 1.33-2.98; P < .001]) and gave a correct answer to the question that removal of organs would disfigure the body and affect the funeral arrangements (59.6% vs 52.0%; AOR, 1.38 [95% CI, 1.06-1.79; P = .02]). We observed an unexpected finding in wave 3 that fewer respondents provided the correct answer to the question on whether wealthy people are more likely to receive an organ transplant (10.7% vs 14.8%; AOR, 0.68 [95% CI, 0.46-1.00; P = .052]). In both waves, the number of respondents who answered this question correctly was fairly low. Finally, with respect to the primary outcome measure, we observed a significant increase in the number of participants with an intent to donate in wave 3 (17.7% vs 12.1%; AOR, 1.55 [95% CI, 1.06-2.26; P = .02]).

Discussion

Although the number of Hispanic Americans on the national organ waiting list has increased dramatically, the Hispanic American population is still 60% less likely to donate organs compared with the non-Hispanic white population. A national organ shortage at crisis proportion requires attention to this gap to increase the number of registered donors. A large presence on the waiting list matched with a historic lack of intent to donate makes the Hispanic American community a prime population on whom to focus resources and educational efforts to increase the number of registered donors.

The purpose of this study was to determine whether the respondents would change their intent to donate after multiple interventions. We observed a 55% increase in the intent to donate organs in wave 3 compared with wave 1. We attribute this increase to the combination of the media and educational interventions implemented as part of our ongoing effort.
The results of the wave 3 survey also demonstrate a significant increase in the respondents’ overall awareness of organ donation. This improved awareness, in parallel with the significant increase in respondents’ recent exposure to information about organ donation, validates the effectiveness of the media campaign and the other community-based interventions to improve understanding about donor registration. The increased knowledge about organ donation demonstrates fewer misconceptions and more validated information being disseminated to the Hispanic American population. The question pertaining to the misconception that a donor’s body is disfigured after organ donation exemplifies the type of knowledge that was affected. A 10% increase in respondents who answered this question correctly was noted in wave 3 of the surveys.

The present study examines the knowledge, awareness, and perceptions regarding organ donation among the Hispanic American population, as well as the impact of community-based interventions to improve understanding about donor registration. The increased awareness about organ donation demonstrates fewer misconceptions and more validated information being disseminated to the Hispanic American population. The question pertaining to the misconception that a donor’s body is disfigured after organ donation exemplifies the type of knowledge that was affected. A 10% increase in respondents who answered this question correctly was noted in wave 3 of the surveys.

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panic American population in Los Angeles County nearly 2 years after implementation of several community-based educational programs. Previous studies noted that a media campaign had a significant immediate effect on the knowledge about and awareness of organ donation, and we now demonstrate an effect 2 years later.

Because the media are a common source of information for the Hispanic American community, in particular broadcast media, information regarding organ donation and transplantation could be propagated through the media. A previous study found that a focused educational media campaign demonstrated a significant increase in knowledge, awareness, and beliefs about organ donation in the Hispanic American population of Los Angeles. The purpose of the present study was to evaluate the longer-term effect of a media campaign and to determine if the addition of targeted interventions in high schools and churches could help increase awareness of and perceptions about organ donation and subsequently the intent of the Hispanic American community to donate.

Although the donor registration rate of our study population was lower than the national average registration rate (22.1% in wave 3 and 21.3% in wave 1 vs 37%), the intent to donate increased by 55% in the 2 years after implementation of our community outreach efforts. These findings validate the positive effects of the outreach efforts in the long term and may translate into increased donor registration rates in the near future.

Limitations to the study include the fact that all respondents were 18 years or older. Only those who had access to telephones and were home during the time of the calls were able to participate. A disparity was noted in the demographic data between the control and study groups. The control group contained a significantly higher number of participants in the age range of 35 to 44 years who were more highly educated, had higher incomes, and were born in the United States. Although the awareness of and knowledge about organ donation increased significantly by wave 3, we could not determine which factor (media campaign, high school program, or church program) played the more important role.

Despite these limitations, the significant increase in intent to donate demonstrates that focused donor outreach programs sustain awareness and knowledge regarding organ donation in the Hispanic American population. These programs should continue to be evaluated and implemented to influence donor registration.

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REFERENCES