Improving Latino Disaster Preparedness Using Social Networks

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Background: Culturally targeted, informal social networking approaches to improving disaster preparedness have not been empirically tested.

Purpose: In partnership with community health promoters and the Los Angeles County Department of Public Health, this study tested a disaster preparedness program for Latino households.

Design: This study had a community-based, randomized, longitudinal cohort design with two groups and was conducted during February–October 2007. Assessments were made at baseline and 3 months. Analyses were carried out January–October 2008.

Settings/participants: Community-based study of 231 Latinos living in Los Angeles County.

Intervention: Participants were randomly assigned to attending *platicas* (small-group discussions led by a health promoter/*promotora de salud*) or receiving "media" (a culturally tailored mailer). A total of 187 (81.0%) completed the 3-month follow-up.

Main outcome measure: A self-reported disaster preparedness checklist was used.

Results: Among participants who did not have emergency water pre-intervention, 93.3% of those in the platica arm had it at follow-up, compared to 66.7% in the media arm (p=0.003). Among participants who did not have food pre-intervention, 91.7% in the platica arm reported it at follow-up, compared to 60.6% in the media arm (p=0.013). Finally, among participants who did not have a family communication plan pre-intervention, 70.4% in the platica arm reported one at follow-up, compared to 42.3% in the media arm (p=0.002).

Conclusions: Although both arms improved in stockpiling water and food and creating a communication plan, the platica arm showed greater improvement than the media group.
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Background

Despite decades of national, state, and local campaigns to motivate the U.S. public to prepare for disasters, and even in the aftermath of September 11 and the 2005 Gulf Coast hurricanes and other highly publicized disasters, only a minority of the U.S. general population (30%–40%) are disaster prepared.[1–3] Most campaigns use macro-level risk-communication practices emphasizing media and social marketing techniques rather than community-based or narrowcast techniques.[4] New approaches are needed and have been called for.[5,6] Community engagement, culturally competent approaches, participatory methods, and partnerships among universities, public health agencies, and community-based organizations are broadly recommended.[7–9] Utilizing informal social networks to improve preparedness is one recently recommended method,[10] and observational data support its potential value.[11–14] All of the above are evidence-based approaches used in community-based health promotion programs on topics as diverse as tobacco, nutrition, exercise, and HIV.[15–17] Thus, viewing disaster preparedness as a health-promoting behavior and applying evidence-based, socially embedded methods of health promotion may hold promise, although no application to disaster preparedness has yet been reported.

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Community engagement, participatory methods, and targeted approaches may be particularly effective for conveying preparedness messages to vulnerable and diverse populations. Historically, the messengers and messages used for disaster preparedness have been best suited to mainstream and easy-to-target audiences.[5,18] New immigrants, people who do not speak the dominant language, those who are transient or illiterate, and the poor who do not have Internet access are often left out. Despite improvements in disaster communication since the September 11 attacks, disaster materials are often written in English only and at reading levels above those recommended for populations with a high prevalence of low literacy.[19,20]

Latinos are one group that is often left out of mainstream messaging, are less prepared than the general population,[3,21,22] and suffer disproportionately from the health, social, and economic consequences of disasters.[18,23–25] Their lower levels of disaster preparedness are only partially explained by socioeconomic disparities.[26] In Los Angeles, for instance, 43% of Latino residents have disaster supplies compared to 57% of non-Latino whites, and this variation remains after adjusting for differences in income and education.[3] The paucity of credible, accessible, and culturally appropriate information may be a contributing factor to this disparity.[5,12,19,27,28] Latinos in Southern California, who make up more than 30% of the region's households, still report difficulty obtaining culturally relevant, Spanish-language disaster communications.[20]

To improve disaster preparedness among low-income Latinos, Programa Para Responder a Emergencias con Preparación (PREP) was developed—a community-based, participatory research study utilizing community engagement through lay health workers and social networks. *PREP* was fielded in a randomized trial to examine the effects on household disaster preparedness of engaging participants in small group discussions ("platicas") led by *promotoras de salud* compared to the effects of receiving a culturally tailored, media-only intervention. This paper reports *PREP*'s trial results. The trial had two main hypotheses. First, participants in the platica group would show greater improvement in stockpiling of disaster supplies than would participants in the media-only group. Second, participants in the platica group would show greater improvement in creating a family communication plan than would participants in the media-only group.

Methods

The PREP program was a partnership among the University of California Los Angeles (UCLA) School of Medicine, the UCLA School of Public Health, the Coalition for Community Health (a local, nonprofit community organization dedicated to building healthy communities in underserved neighborhoods in Los Angeles), and the Los Angeles County Department of Public Health. The following study used a randomized, longitudinal cohort design with two groups and was conducted from February to October 2007. The study was approved by the UCLA School of Medicine IRB.

Study Recruitment and Randomization

Participants were recruited using respondent-driven sampling (RDS), a chain referral sampling method that uses social networks to gather a sample representative of the target population.[29,30] It has been used in previous studies to recruit populations that cannot be reached through community or venue-based sampling, such as injection drug users and Latino gay men.[31] There is evidence that RDS provides samples that are comparable to random population-based sampling, although its ability to produce a representative sample has been challenged.[32]

Recruitment began when the community partners identified three Latino men and four Latina women living in Los Angeles County as the initial participants, or "seeds." Seeds initiate the chain referral by recruiting peers, who, in turn, recruit other peers into the study. After providing informed consent, the seeds completed the baseline interview and received instructions on whom to recruit and the recruitment process. The seeds were given four coupons to give out to potential participants. Each coupon contained a unique code and the study telephone number with calling instructions. Seeds were given $25 for each eligible participant they recruited. All potential participants who called and presented a valid coupon were assessed for eligibility. To be eligible, potential participants had to self-identify as Latino, be aged ≥18 years, and live in a house or apartment in Los Angeles County. Only one adult per household was eligible to participate. Participants, in turn, became recruiters and were given four coupons to recruit other peers.

All participants (including the seeds) were randomized using block randomization. Using their unique identification numbers, participants were placed into blocks corresponding to their ZIP codes. Blocks of six to ten participants were provided to the statistician, and participants were randomly assigned to either the platica group (those who participated in small-group discussions) or the media group (those who were mailed culturally sensitive, written materials on preparedness developed specifically for PREP in Spanish and English). The content and delivery of the two interventions were based on the focus group interviews, which provided information about desire for platicas and trust in promotoras. Twenty-five 1-hour platicas were held throughout Los Angeles.

Assessment

Two telephone assessments (pre-intervention and 3 months post-intervention) were conducted. Individual disaster preparedness was assessed using an adapted version of Bourque's preparedness questionnaire.[33] Bilingual, bicultural telephone interviewers blind to participants' study assignments performed the assessments. The participants received $25 per assessment.

Promotora Training in Disaster Preparedness

Promotoras de salud are culturally competent lay health workers who promote health among groups that traditionally lack access to health and public health services. The promotoras who led the platicas were bilingual, experienced promotoras who came from Latino neighborhoods in Los Angeles. They received an additional 6 hours of disaster preparedness training through courses available through the American Red Cross and by reviewing book chapters and an instructional video with the principal investigator.

Intervention Delivery

All participants in the media group received a mailer that included a pamphlet, a laminated shopping card, and six perforated preprinted communication cards with instructions on how to fill them out. All participants in the platica group received a standardized 1-hour session led by the trained promotoras from a manual designed for the study. Quality control was monitored through weekly meetings with the promotoras and study team.

Data Analysis

Summary statistics were generated to characterize the participants' baseline sociodemographic information. Participants who completed the study were compared to participants lost to follow-up using the *t* test or Wilcoxon rank sums test for continuous variables and the chi-square test or Fisher's exact test for categoric variables. Similarly, participants in the two intervention groups were compared using the *t* test or Wilcoxon rank sums test for continuous variables and the chi-square test or Fisher's exact test for categoric variables.

The main outcomes in this study were the reported improvement in stockpiling of disaster supplies and in family communication plans. It was estimated that enrolling 240 participants would provide 90% power to detect an outcome difference of 0.45 in effect size between the two intervention groups at the 5% level. Only the 187 participants who completed the 3-month follow-up were included in the analyses. Thus, the study has 82% power to detect a difference of 0.45 in effect size. Fisher's exact test was used to compare improvements in preparedness between study groups, and the McNemar test was used to evaluate the improvement in preparedness within the platica and media groups. All tests were two-sided, and all analyses were conducted using RDS Analysis Tool (RDSAT) and STATA version 10. Analyses were conducted during January–October 2008.

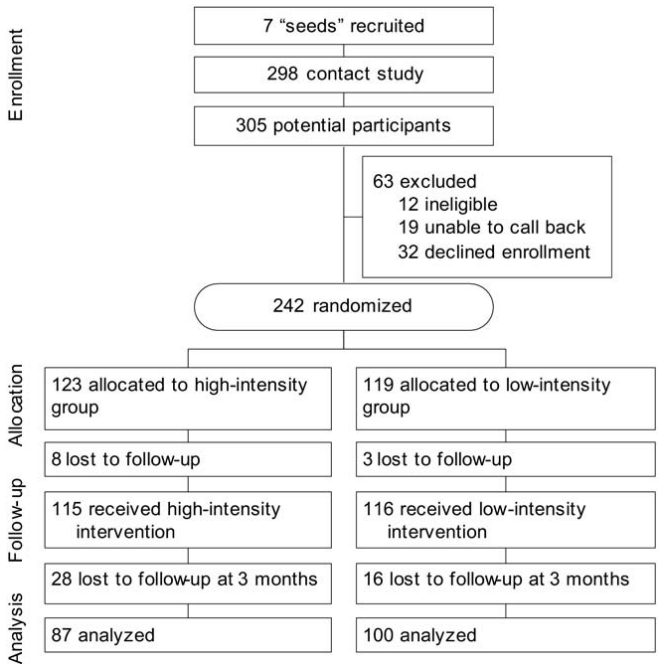

Figure 1. Flow diagram of participants through each stage of the trial

Results

The seven seeds led to the recruitment of 298 people who contacted the study investigators. Of these, 56 were excluded, and subsequently 242 Latinos living in Los Angeles County were enrolled in the study from September 2007 to December 2007 and randomized to one of two groups (Figure 1). Eleven were immediately lost to follow-up, leaving 231 who received the intervention. Of those, 187 participants (81.0%) completed the 3-month follow-up and were included in the following analyses. Participants lost to follow-up did not differ significantly from participants who completed the study, in terms of age, gender, country of origin, income, education, marital status, dependent children in the home, employment status, and home ownership (data not shown). There were no significant differences in the participant characteristics between the two study arms (Table 1).

As shown in Table 2, participants in both the platica and media groups reported significantly increased preparedness from pre-intervention to post-intervention, with a greater proportion of both arms reporting stockpiled water, food, radio, batteries, flashlights, first-aid kits, pet food, blankets, rain gear, cash, and written family communication plans ($p<0.05$). The comparison group (media) did very well in the study, often doubling their preparedness.

Table 3 presents a direct comparison of the level of improvement between the two groups among those that were not prepared in specific areas at baseline. The platica group had larger improvements in preparedness than did the media group for several key items,

Table 1. Characteristics of the randomized intervention arms, PREP, 2007

Characteristics	Media (n=100), n (%)	Platica (n=87), n (%)	p-value
Age (M), years	100 (36.97)	86 (37.08)	0.951
Gender			0.846
Male	32 (32.00)	29 (33.33)	
Female	68 (68.00)	58 (66.67)	
Education level			0.748
Some high school or less	75 (75.00)	67 (77.01)	
High school graduate and above	25 (25.00)	20 (22.99)	
Below federal poverty level			0.466
No	11 (11.00)	15 (17.24)	
Yes	71 (71.00)	58 (66.67)	
DK/REF	18 (18.00)	14 (16.09)	
Marital status			0.981
Not married	45 (45.00)	39 (44.83)	
Married	55 (55.00)	48 (55.17)	
Children aged <17 years living together			0.748
No	25 (25.00)	20 (22.99)	
Yes	75 (75.00)	67 (77.01)	
Work status			0.726
Not working	29 (29.00)	21 (24.14)	
Currently working	49 (49.00)	47 (54.02)	
Housekeeping	22 (22.00)	19 (21.84)	
Pay rental			0.597
No	9 (9.00)	6 (6.90)	
Yes	91 (91.00)	81 (93.10)	
Country of origin			0.284
Non-Mexico	36 (36.00)	38 (43.68)	
Mexico	64 (64.00)	49 (56.32)	

Note: χ^2 test for the difference between media and platica groups. t test was used for the age difference between media and platica groups.
PREP, Programa Para Responder a Emergencias con Preparación

such as stockpiling of water, food, and blankets, and establishing a family communication plan. For instance, 70.4% of platica participants who did not have a written family communication plan pre-intervention reported having a plan 3 months post-intervention. In comparison, 42.3% of participants in the media arm who did not have a plan pre-intervention reported having one 3 months post-intervention (p=0.002).

Table 2. Distribution of preparedness items completed at pre- and post-intervention by study arm

	Media (n=100), %			Platica (n=87), %		
	Pre	**Post**	**p-value**	**Pre**	**Post**	**p-value**
Communication plan	29.0	52.0	<0.001	37.9	75.9	<0.001
Disaster supplies						
Water	55.0	80.0	<0.001	69.0	95.4	<0.001
Food	67.0	80.0	0.0124	72.4	95.4	<0.001
Radio	58.0	78.0	0.001	70.9	80.5	0.117
Battery	49.0	68.0	0.004	51.7	78.2	<0.001
First-aid kit	48.0	60.0	0.058	47.1	71.3	<0.001
Flashlight	75.0	84.0	0.072	78.2	90.8	0.016
Extra batteries	47.0	69.0	<0.001	48.3	74.7	<0.001
Documents	82.0	86.0	0.346	86.2	87.4	0.808
Prescribed medicine	27.0	29.0	0.670	25.3	24.1	0.808
Pet food	8.0	20.0	0.007	18.4	24.1	0.166
Cash	53.0	61.0	0.182	50.6	62.1	0.033
Blanket	52.0	64.0	0.034	59.8	79.3	0.002
Rain gear	46.0	53.0	0.209	42.5	60.9	0.005

Note: McNemar test was applied for analyzing the difference between pre- and post-intervention.

Discussion

It was found that an intervention delivered through a culturally targeted program using community engagement and informal social networks significantly increased disaster preparedness in this difficult-to-reach population. At 3 months, more participants in the platica arm than in the media arm reported having stockpiled a 3-day supply of water, nonperishable food, and blankets. Having emergency reserves of food and water and creating a communication plan are considered to be the most important preparedness actions that a household can take for a disaster or a terrorist attack.[34] Participants in the platicas therefore accomplished more of the priority actions needed to ready themselves for a disaster.

Although promotoras have demonstrated their efficacy in promoting healthy behaviors such as cancer screening, nutrition, cardiovascular health, and maternal and child health, their use in promoting disaster preparedness is relatively new.[35,36] The promotoras proved effective in this study, consistent with other RCTs evaluating promotoras compared to culturally sensitive print material.[35] Importantly, among people who did not already have a plan, platicas led more participants to develop a written plan for communicating with household members than did the mailed brochure. The small-group, interactive approach offered by the promotoras is believed to have helped participants to develop specific plans. An emergency com-

Table 3. Distribution of preparedness items completed at postintervention among participants susceptible at pre-intervention, by study arm

	Susceptible who completed activity		
Completion of activity at 3 months	**Media, % (*n*)**	**Platica, % (*n*)**	***p*-value**
Communication plan	42.3 (41/71)	70.4 (38/54)	0.002
Disaster supplies			
Water	66.7 (30/45)	98.3 (26/27)	0.003
Food	60.6 (20/33)	91.7 (22/24)	0.013
Radio	69.1 (29/42)	68.0 (17/25)	1.000
Battery	60.8 (31/51)	66.7 (28/42)	0.666
First-aid kit	50.0 (26/52)	52.2 (24/46)	0.843
Flashlight	68.0 (17/25)	84.2 (16/19)	0.301
Extra batteries	56.6 (30/53)	64.4 (29/45)	0.535
Documents	61.1 (11/18)	75.0 (9/12)	0.694
Prescribed medicine	16.4 (12/73)	12.3 (8/65)	0.629
Pet food	17.4 (16/92)	12.7 (9/71)	0.512
Cash	46.8 (22/47)	37.2 (16/43)	0.398
Blanket	45.8 (22/48)	68.6 (24/35)	0.047
Rain gear	35.2 (19/54)	48.0 (24/50)	0.233

Note: Fisher's exact test was applied for the difference by intervention arms.

munication plan requires discussion about likely disaster scenarios and communication and agreement among family members. Promotoras leading small-group discussions may provide needed assistance in clarifying uncertainties and misunderstandings regarding communication plans. Not surprisingly, surveys consistently report that fewer people have plans than supplies, even after media campaigns are launched. The platica intervention may have worked to eliminate this discrepancy. In addition, these results are similar to those reported in an uncontrolled pre–post study, Vias de la Salud, a promotora-led community-education program to improve disaster preparedness among low-income Latinos in Maryland. In that report, promotora-led meetings produced substantial increases in having a family communication plan from 33% at baseline to 100% at the post-test.[37]

This study is the first in which RDS has been used in a disaster preparedness study. The study recruited, as intended, a Latino sample that was poorer, less educated, and had a greater percentage of immigrants than the general Latino population nationally and locally. Although this fact limits study generalizability to the broader Latino community, it is also a strength of the study, as no empirical, peer-reviewed studies on disaster preparedness have focused on this demographic segment of the Latino community. The ability to recruit this population demonstrates the value of RDS for recruiting populations who are often not well represented in research. The informal social networks that form the basis of RDS also may have made participants more likely to respond to the intervention.

In addition, this study had other potential limitations. It relied on self-selected participants, self-reported data to measure outcomes, and provided financial incentives for participating in the assessments. The participants were given fairly large financial incentives ($25 for each assessment interview), which may explain the relatively high completion rate. Participants may have reported increased behaviors to satisfy the researchers, leading to a social desirability bias. Also, a Hawthorne effect cannot be excluded, in which participants improved their disaster preparedness simply because of the attention they received from the study, not because of the tested interventions. However, participants in the platica group increased their activity in the most basic and important areas (e.g., water, food, communication plan), mitigating concerns about these biases.

Conclusion

National policy documents recognize that preparedness maximizes the potential for resilience when vulnerable communities are struck by disaster[8] and that "resilient communities begin with prepared individuals and families."[38] With the relatively recent recognition that public health agencies should play a major role in disaster preparedness[8,39] and the emerging understanding that disaster preparedness is a health promotion activity that requires further research,[4,8] health departments should be using empirically valid methods for improving disaster preparedness. This study provides an evidence-based method for improving disaster preparedness at the household level in Latino communities. Future efforts should develop and test scalable versions of PREP.

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References

1. Redlener I, Grant R, Berman D, Jacobs D, Abrams D. Where the American public stands on terrorism, security and disaster preparedness five years after September11 and one year after Katrina: National Center for Disaster Preparedness, Columbia University, 2006.
2. Health threats: lessons from the CDC-ASPH Pre-Event Message Development Project. Am J Public Health 2008.
3. Eisenman DZ, Zhou Q, Ong M, Asch S, Glik D, Long A. Variations in disaster preparedness by mental health, perceived general health, and disability status. Disaster Med Public Health Prep 2009;3(1):33–41.
4. Glik DC. Risk communication for public health emergencies. Annu Rev Public Health 2007;28:33–54.
5. Andrulis DP, Siddiqui NJ, Gantner JL. Preparing racially and ethnically diverse communities for public health emergencies. Health Aff (Millwood) 2007;26(5):1269–79.
6. Redlener I, Berman D. National preparedness planning: The historical context and current state of the U.S. public's readiness. J Int Aff 2006; 59(2):87–103.
7. IOM. Research priorities in emergency preparedness and response for public health systems. A letter report. Washington DC: The National Academies Press, 2008.

8. Advancing the nation's health: a guide to public health research needs, 2006–2015. Hyattsville, MD: USDHHS, CDC, 2006.
9. Schoch-Spana M, Courtney B, Norwood A. Expanding the public's role in health emergency policy. Biosecur Bioterror. Mar 24, 2009.
10. National Academy of Sciences. Applications of social network analysis for building community disaster resilience: a workshop; February 11–12, 2009; Washington DC.
11. Riad JK, Norris FH, Ruback RB. Predicting evacuation in two major disasters: risk perception, social influence, and access to resources. J Appl Soc Psychol 1999;29(5):918–34.
12. Eisenman DP, Cordasco KM, Asch S, Golden JF, Glik D. Disaster planning and risk communication with vulnerable communities: lessons from Hurricane Katrina. Am J Public Health 2007;97(1S):S109–15.
13. Mileti D, Darlington JD. The role of searching in shaping reactions to earthquake risk information. Soc Probl 1997;44:89–103.
14. Heller K, Alexander DB, Gatz M, Knight BG, Rose T. Social and personal factors as predictors of earthquake preparation: the role of support provision, network discussion, negative affect, age, and education. J Appl Soc Psychol 2005;35(2):399–422.
15. CDC. Guide to community preventive services: reducing tobacco use initiation: mass media education campaigns combined with other interventions. www.thecommunityguide.org/tobacco/initiation/massmediaeducation.html.
16. CDC. Guide to community preventive services: behavioral and social approaches to increase physical activity: social support interventions in community settings. www.thecommunityguide.org/pa/behavioral-social/community.html.
17. CDC. Community-level prevention of HIV infection among high-risk populations. MMWR Recomm Rep 1996;45(10):1–24.
18. Fothergill A, Maestas E, Darlington J. Race, ethnicity and disasters in the U.S.: a review of the literature. Disasters 1999;23(2):156–73.
19. James X, Hawkins A, Rowell R. An assessment of the cultural appropriateness of emergency preparedness communication for low income minorities. J Homeland Secur Emerg Manag 2007;4(3):1–24.
20. Mathew AB, Kelly K. Disaster preparedness in urban immigrant communities: lessons learned from recent catastophic events and their relevance to Latino and Asian communities in Southern California. Los Angeles CA: Tomas Rivera Policy Institute and Asian Pacific American Legal Center, 2008.
21. Peguero AA. Latino disaster vulnerability: the dissemination of hurricane mitigation information among Florida's homeowners. Hisp J Behav Sci 2006;28(1):5–22.
22. Faupel CE, Kelley SP, Petee T. The impact of disaster education on household preparedness for Hurricane Hugo. Int J Mass Emerg Disasters 1992;10:5–24.
23. Bourque LB, Siegel JM, Shoaf KI. Psychological distress following urban earthquakes in California. Prehospital Disaster Med 2002;17(2):81–90.
24. Siegel JM. Emotional injury and the Northridge, California earthquake. Nat Hazards Rev 2000;1(4):204–11.
25. Galea S, Resnick H, Ahern J, et al. Posttraumatic stress disorder in Manhattan, New York City, after the September 11th terrorist attacks. J Urban Health 2002;79(3):340–53.
26. Fothergill A, Maestras E, Darlington J. Race, ethnicity and disasters in the U.S.: a review of the literature. Disasters 1999;23(2):156–73.
27. Aguirre BE. The lack of warnings before the Saragosa Tornado. Int J Mass Emerg Disasters 1988;6(1):65–74.
28. Phillips BD. Cultural diversity in disasters: sheltering, housing, and long-term recovery. Int J Mass Emerg Disasters 1993;11(1):99–110.
29. Heckathorn DD. Respondent-driven sampling II: deriving valid population estimates from chain-referral samples of hidden populations. Soc Probl 2002;49(1):11–34.
30. Heckathorn DD. Respondent-driven sampling: a new approach to the study of hidden populations. Soc Probl 1997;44:174–99.
31. Ramirez-Valles J, Heckathorn DD, Vazquez R, Diaz RM, Campbell RT. From networks to populations: the development and application of respondent-driven sampling among IDUs and Latino gay men. AIDS Behav 2005;9(4):387–402.
32. Martin JL, Wiley J, Osmond D. Social networks and unobserved heterogeneity in risk for AIDS. Popul Res Policy Rev 2003;22(1):65–90.
33. Bourque LB, Shoaf KI, Nguyen LH. Survey research. Int J Mass Emerg Disasters 1997;15(1):71–101.
34. National Capital Region Emergency Preparedness Campaign. Baseline preparedness measurement for the campaign. http://www.ncrhomelandsecurity.org/.
35. Gibbons MC, Tyus NC. Systematic review of U.S.-based randomized controlled trials using community health workers. Prog Community Health Partnersh 2007;1(4):371–81.
36. Carter-Pokras O, Zambrana RE, Mora SE, Aaby KA. Emergency preparedness: knowledge and perceptions of Latin American immigrants. J Health Care Poor Underserved 2007;18(2):465–81.
37. Emergency preparedness education for the Latino community conducted by health promoters: final report. www.montgomerycountymd.gov/content/hhs/phs/apc/finallatinoemergencyreportcombined.pdf.
38. Department of Homeland Security. What's new in the National Response Framework. www.fema.gov/pdf/emergency/nrf/whatsnew.pdf.
39. Morse S. Disaster preparedness. In: Gorin SS, Arnold J, eds. Health promotion practice. San Francisco: Jossey Bass, 2006.