screening and the HPV vaccine through peer education is critical to reducing the cervical cancer burden in medically underserved Hispanic communities. ∎

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Contributors

J.S. Luque developed the curriculum, analyzed the data, and wrote the article. M. Mason, C. Reyes-Garcia, and C.D. Meade contributed to the curriculum design and assisted with the writing of the article. A. Hinojosa recruited the *promotoras* and contributed to the writing of the article.

Human Participant Protection

The Georgia Southern University institutional review board approved this study.

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Community Participatory Research With Deaf Sign Language Users to Identify Health Inequities

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Deaf people who use American Sign Language (ASL) are medically underserved and often excluded from health research and surveillance. We used a community participatory approach to develop and administer an ASL-accessible health survey. We identified deaf community strengths (e.g., a low prevalence of current smokers) and 3 glaring health inequities: obesity, partner violence, and suicide. This collaborative work represents the first time a deaf community has used its own data to identify health priorities. (*Am J Public Health*. 2011;101:2233–2244. doi:10.2105/AJPH.2011.300247)

Deaf people who use American Sign Language (ASL) are medically underserved and often excluded from health research and public health surveillance.[1,2] ASL is different from English[3] and, as is the case with many of the world's languages,[4] has no written form. Many ASL users have been deaf since birth or early childhood. Biological and social determinants of health suggest that communities of ASL users should be predisposed to health inequities.[2]

Rochester, New York, has a large population of deaf ASL users. The Rochester Prevention Research Center's National Center for Deaf Health Research (NCDHR) used a community participatory approach to develop and administer an ASL-accessible health survey to estimate deaf individuals' health status and health risk and to compare results with data from the local general population as a means of identifying health inequities.

METHODS

Deaf and hearing researchers and community members worked collaboratively to develop a linguistically and culturally appropriate survey based on the Behavioral Risk Factor Surveillance System (BRFSS).[5] We worked with community members to prioritize health survey topics and developed items to measure important deaf-related demographic information (e.g., age at onset of deafness).[6,7] We adapted existing English-language survey items through a process that included translation,[8] back-translation, and in-depth individual cognitive interviews. A computer interface was used to present survey items in sign language (via video) and written English on a touch-screen kiosk. The NCDHR Deaf Health Survey contained 98 items.

We recruited deaf individuals through deaf community organizations, via e-mail and posters, and face-to-face during community events; 339 deaf adults from the Rochester metropolitan statistical area completed the survey over a period of 6 months in 2008. Results were compared with BRFSS data collected via random-digit dialing in the Rochester community in 2006.[9] We used SAS version 9.2 survey procedures[10] to adjust for possible biases introduced by telephone survey methodology. The Rochester deaf community contributed to interpretation of the survey findings and identified health inequities in need of future research and intervention.

TABLE 1—Demographic and Deaf-Related Characteristics: 2008 NCDHR Deaf Health Survey and 2006 Monroe County BRFSS, Rochester, NY

	NCDHR Deaf Health Survey (n = 339)	Monroe County BRFSS (n = 2546)
Age, y		
Mean (95% CI)	46.4 (45.0, 47.8)	46.3 (45.3, 47.3)
Range	18–88	18–95
Male, % (95% CI)	45.5 (40.2, 50.9)	47.6 (44.9, 50.3)
Race, % (95% CI)		
White	85.7 (81.8, 89.6)	82.4 (80.4, 84.5)
African American	4.4 (2.1, 6.7)	12.2 (10.6, 13.9)
Asian/Pacific Islander	2.5 (0.8, 4.3)	2.5 (1.4, 3.6)
American Indian/Alaska Native	1.3 (0.02, 2.5)	0.6 (0.2, 1.0)
Other or multiple races	6.0 (3.4, 8.7)	2.2 (1.5, 2.9)
Hispanic % (95% CI)	3.2 (1.2, 5.1)	3.9 (2.9, 4.8)
Household income, $, % (95% CI)		
< 20 000	28.2 (23.0, 33.4)	19.2 (17.0, 21.5)
20 000–35 000	23.4 (18.5, 28.3)	15.1 (13.3, 16.9)
35 000–75 000	35.7 (30.2, 41.3)	35.9 (33.1, 38.7)
> 75 000	12.7 (8.9, 16.6)	29.7 (27.1, 32.4)
Highest level of education, % (95% CI)		
< high school	5.1 (2.6, 7.5)	7.1 (5.7, 8.5)
High school or equivalent	12.7 (9.0, 16.4)	26.4 (24.0, 28.8)
Some college/2-y degree	34.1 (28.8, 39.3)	24.4 (22.1, 26.8)
≥ college	48.1 (42.5, 53.6)	42.1 (39.5, 44.7)
Marital status, % (95% CI)		
Married	50.0 (44.5, 55.5)	53.2 (50.5, 55.9)
Divorced	15.2 (11.2, 19.2)	9.2 (7.9, 10.4)
Widowed	1.9 (0.4, 3.4)	6.6 (5.6, 7.5)
Separated	3.8 (1.7, 5.9)	2.2 (1.6, 2.7)
Never married	24.7 (19.9, 29.4)	23.4 (20.7, 26.0)
Member of unmarried couple	4.4 (2.1, 6.7)	5.5 (4.2, 6.9)
Age at onset of deafness, y, % (95% CI)		
Born deaf	69.8 (64.6, 74.9)	. . .
< 1	8.4 (5.3, 11.5)	. . .
1–3	10.0 (6.6, 13.3)	. . .
4–10	4.8 (2.4, 7.2)	. . .
11–18	1.0 (0.0, 2.0)	. . .
≥ 19	1.3 (0.0, 2.5)	. . .
Don't know	4.8 (2.4, 7.2)	. . .
Mother, father, or siblings are deaf, % (95% CI)	31.9 (26.8, 37.1)	. . .

Note. BRFSS = Behavioral Risk Factor Surveillance System; CI = confidence interval; NCDHR = National Center for Deaf Health Research. Percentages may not sum to 100 because of rounding. Ellipses indicate question not asked in Monroe County BRFSS survey.

RESULTS

Survey respondents were predominantly White and highly educated, and most had been deaf since birth or early childhood (Table 1). It is notable that many of the NCDHR Deaf Health Survey findings were similar to the 2006 Rochester telephone BRFSS results.

The low prevalence of smoking observed (9.1%), less than half the smoking prevalence in the local general population (18.1%), is consistent with other reports[7,11-13] (Table 2). The low smoking prevalence is consistent with our participants' high educational attainment but not their relatively low income (the median income of the local general population is $51 799[14]). Research designed to provide an understanding of smoking in the deaf community could inform smoking-related interventions with other groups.

The prevalence of obesity among our respondents was higher than that in the local general population (Table 2). Research has shown that general population participants tend to overreport their height or underreport their weight (or both) in telephone surveys.[15] It may be that similar reporting biases were not present among our deaf participants. Even so, the high prevalence of overweight and obesity warrants a culturally appropriate and accessible intervention.

The prevalence of past-year suicide attempts in our sample appeared to be higher than that observed in the 2006 Rochester telephone survey (Table 2). Although other researchers have reported an association between deafness and suicide risk,[16] none of these studies involved a community-based sample.

We measured past-year and lifetime experiences of partner violence (Table 2). One review reports that deaf children are at high risk for sexual abuse.[17] Childhood trauma is associated with adult health consequences,[18] including interpersonal violence, suicide attempts, and obesity, outcomes that are consistent with our survey findings.

DISCUSSION

Our community participatory approach successfully assessed health status and identified health risks in a community-wide sample of deaf individuals. This work is an important step toward the inclusion of deaf ASL users in population health surveillance and health promotion programs designed to address health priorities. Our research builds on previous research that used sign language interview surveys with deaf patients,[19] sign language interview surveys,[11,19] and topic-focused computer-based sign language surveys.[12,20-23] We advanced this research through our community participatory approach and by using an accessible, standardized, self-administered computer-based survey to measure a broad range of health topics in a community-based sample and setting.

TABLE 2—Selected Findings: 2008 NCDHR Deaf Health Survey and 2006 Monroe County BRFSS, Rochester, NY

	NCDHR Deaf Health Survey, % (95% CI)	Monroe County BRFSS, % (95% CI)
All participants		
Current smoker	9.1 (6.4, 12.9)	18.1 (16.1, 20.2)
Weight classification by BMI		
Neither overweight nor obese (≤ 24.9 kg/m^2)	31.7 (26.6, 36.8)	38.8 (36.1, 41.5)
Overweight (25.0–29.9 kg/m^2)	34.2 (29.0, 39.3)	34.6 (32.1, 37.1)
Obese (≥ 30.0 kg/m^2)	34.2 (29.0, 39.3)	26.6 (24.2, 29.0)
Ever attempted suicide	14.6 (10.7, 18.6)	. . .
Attempted suicide in past 12 mo	2.2 (0.6, 3.9)	0.4 (0.2, 0.7)
Participants younger than 65 y[a]		
Intimate partner violence		
Ever been emotionally abused	27.5 (22.4, 33.1)	. . .
Emotionally abused in past 12 mo	7.4 (4.8, 11.3)	. . .
Ever been physically abused	21.0 (16.3, 25.8)	13.9 (11.8, 16.0)
Physically abused in past 12 mo	3.1 (1.1, 5.1)	2.7 (1.7, 3.8)
Ever been forced to have sex	20.8 (16.1, 25.6)	5.8 (4.5, 7.0)
Forced to have sex in past 12 mo	3.8 (1.6, 6.1)	0.7 (0.1, 1.3)

Note. BMI = body mass index; BRFSS = Behavioral Risk Factor Surveillance System; CI = confidence interval; NCDHR = National Center for Deaf Health Research. Percentages may not sum to 100 because of rounding. Ellipses indicate question not asked in Monroe County BRFSS survey.

[a]The Monroe County BRFSS survey administered intimate partner violence items only to respondents younger than 65 years, so for comparison we used the same age limit for our deaf sample. For participants under age 65, NCDHR Deaf Health Survey n=308, and Monroe County BRFSS n=1906.

The limitations of our study underscore the challenges of conducting deaf health surveys. We did not have reliable measures of the size or demographics of the Rochester or US population of deaf adult ASL users.[24] Although the fact that our Rochester sample was predominantly White is consistent with national data,[6,25,26] our sample's high educational attainment is not typical of the US deaf community.[6] Our findings probably underestimate the magnitude of health disparities experienced by other populations of deaf ASL users.

The *Healthy People 2020* goal to promote health among people with disabilities requires accessible data collection.[27] It is now possible, through surveys such as the one described here, to include deaf ASL users in public health surveillance programs. ∎

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Human Participant Protection

This study was approved by the institutional review boards of the University of Rochester and the Rochester Institute of Technology. Informed consent was obtained from all participants via computer-based video in American Sign Language with written English.

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Sexual Orientation Differences in Asthma Correlates in a Population-Based Sample of Adults

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To understand what conditions may correlate with asthma diagnoses in the lesbian, gay, and bisexual (LGB) population, we used Massachusetts Behavioral Risk Factor Surveillance System data to construct multivariable logistic regression models separately for LGB individuals and heterosexuals. Current or former smoking and obesity were positively associated with history of an asthma diagnosis among both LGB individuals and heterosexuals. Being underweight (negative correlation) and overweight and reporting frequent symptoms of depression in the preceding 30 days also predicted a history of asthma diagnosis among heterosexuals. (*Am J Public Health.* 2011;101:2233–2244. doi:10.2105/AJPH.2011.300305)

Most research on the health of the lesbian, gay, and bisexual (LGB) population has focused on HIV/AIDS, sexual health, and substance use.[1,2] However, recent studies have documented elevated rates of chronic disease risk factors (i.e., physical inactivity, smoking, alcohol and substance use, obesity, lack of access to health care, and nonuse of preventive care) among LGB people relative to heterosexuals.[3–6] In particular, LGB populations may be at increased risk for asthma, a chronic illness that involves inflammation in the airways.[1]

One analysis revealed that rates of asthma were higher among both male and female members of same-sex couples than among members of male–female couples.[1] Earlier studies showed elevated rates of asthma among some groups of gay, lesbian, and homosexually experienced heterosexual individuals in California and among lesbians and bisexual women in Washington State.[7,8] A more recent analysis of data from the Massachusetts Behavioral Risk Factor Surveillance System (BRFSS) indicates that asthma is disproportionately diagnosed among LGB individuals.[9] We assessed how education, urbanicity, weight status, smoking, access to primary care, anxiety, and depression may correlate with asthma diagnoses in the LGB population to help public health practitioners and health care clinicians provide effective treatment.

METHODS

We used BRFSS data collected between 2001 and 2008 to study 67 359 Massachusetts residents, of whom 2271 (3.4%) reported a gay–lesbian (homosexual) or bisexual identity. Details on sample construction and survey questions are available elsewhere.[9] Risk factors that were significantly associated with an asthma diagnosis in binary or multinomial logistic regression models adjusted for age, gender, and race/ethnicity were included in one final regression model for LGB individuals and one model for heterosexuals. We constructed gender-stratified models to assess differences between men and women. The outcome variable was self-reported history of an asthma diagnosis.

We used sampling weights provided by the Massachusetts Department of Public Health to address variability in sampling and respondent participation. The weighted sample allowed results to reflect the actual state adult household population. All tests of statistical association were 2-tailed, and the alpha level was set to 0.05. Analyses were conducted with SAS statistical software version 9.2 (SAS Institute Inc, Cary, NC). We calculated design-based estimates and confidence intervals (CIs), with sample sizes corresponding to the actual number of participants.

RESULTS

As shown in Table 1, a somewhat larger percentage of LGB respondents than heterosexuals reported a lifetime diagnosis of asthma